SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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DIRECT-ACTING

STEAM PUMPS.

HAYWARD TYLER AND CO.'S.

Cope and Maxwell's

PATENT

"UNIVERSAL"

PUMPS

Have stood the test of NEARLY TEN YEARS, and have proved themselves to be the

SIMPLEST,

BEST, and

MOST DURABLE.

TESTIMONIALS.

YATE COLLIERIES, NEAR CHIPPING SUDBURY,

MESSRS. HAYWARD TYLER AND CO., January 24th, 1877.

GENTLEMEN, In reply to yours of the 15th inst. (which absence prevented my attending to earlier), I am very pleased to add a testimonial to the efficiency of your "Universal" Steam Pump. The one you supplied to us has worked most satisfactorily for the past six months, without giving us the least trouble. It is lifting over 2500 gallons an hour up a perpendicular height of 480 feet—going 30 strokes per minute, with a steam pressure of 30 lbs. per square inch—boiler 340 yards from pump. I can strongly recommend it as the most efficient pump for high lifts ever seen. I shall be very pleased to give information to any of your friends, or take them to view it working.—Yours faithfully,

EDWD. W. B. MONKS, Managing Director.

ECKINGTON, February 4th, 1877

Messrs. HAYWARD TYLER AND CO.,

GENTLEMEN,—In reply to your inquiry, the 15 by 7 Long Stroke Pump Messrs. Hayward Tyler and Co. supplied us with is working remarkably well; 7 ft. suction, and forcing the water 180 ft. perpendicular, with 40 lbs. of steam.

Before putting this engine in we had one H. P. pumping engine. 50-inch cylinder, 9 ft. stroke, and firing six boilers, 36 ft. by 4 ft. to drive it; now we only require two of the above boilers to do the same work with much less annoyance and attention. I am, Gentlemen, yours truly, JOHN MARPLES.

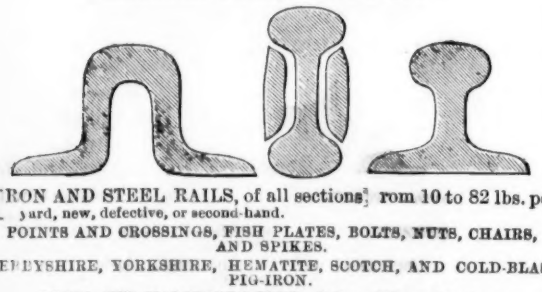
Engineer for J. and G. WELLS, Eckington Collieries.

39, Queen Victoria Street,

LONDON, E.C.

JOHN BEATSON AND SON,

IRONGATE, DERBY.



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DERBYSHIRE, YORKSHIRE, HEMATITE, SCOTCH, AND COLD-BLAST PIG-IRON.

STEEL AND MALLEABLE IRON, of all qualities and sections.

Delivered at all Ports and Railway Stations in Great Britain.

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JOHN AND EDWIN WRIGHT,

PATENTEES. ESTABLISHED 1770.

MANUFACTURERS OF EVERY DESCRIPTION OF IMPROVED

Patent Round and Flat Wire Ropes,

from the very best quality of Charcoal and Patent Steel Wire. Galvanised Wire, Ropes for Ships' Rigging, Galvanised Signal and Fencing Strand, Copper Rope Lightning Conductors, Colliery Ropes and Steam Plough Ropes made from the best Patent Improved Steel Wire.

PATENT ROUND AND FLAT HEMP ROPES,

Hemp, Flax, Engine Yarn, Cotton Waste, Tarpauling, Oil Sheets, Brattice Cloth, Wagon Covers, &c., &c.

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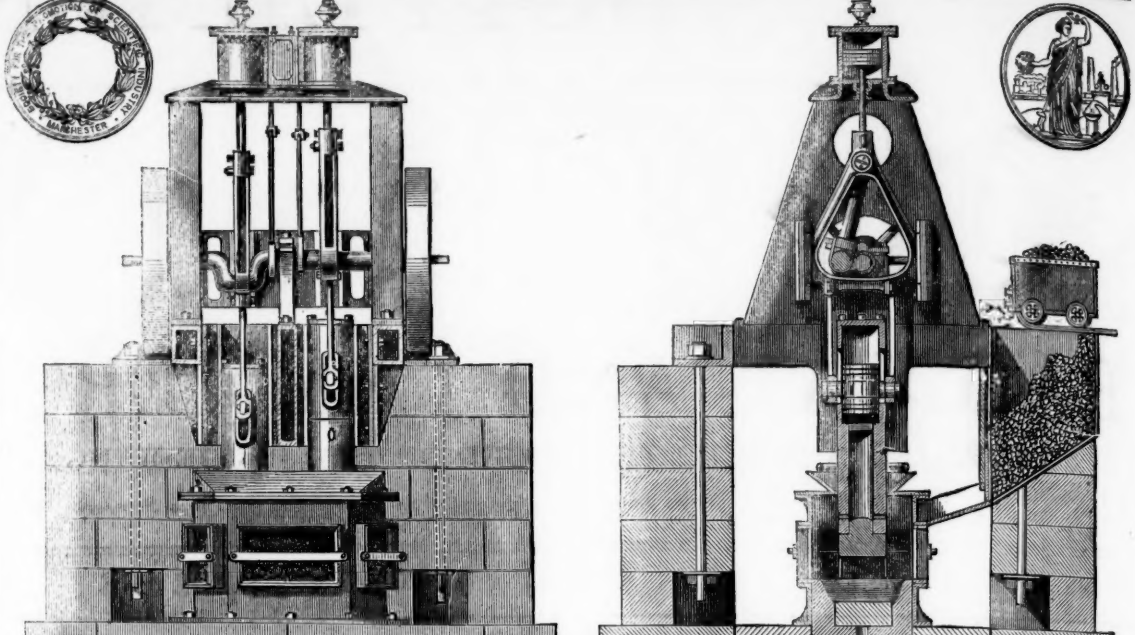
All communications to be forwarded to the BIRMINGHAM ADDRESS.



SHOLL'S PATENT DIRECT-ACTING

PNEUMATIC STAMPERS,

For Pulverising Tin and Lead Ores, Gold Quartz, &c.,

SOLE MAKERS FOR CORNWALL,

N. HOLMAN AND SONS,

ST. JUST FOUNDRY, NEAR PENZANCE, CORNWALL.

All objectionable features of "wear and tear" common to the original and existing Pneumatic Stamps (driven by belts) are removed in this patent, and leather glands and stuffing boxes entirely dispensed with, the pneumatic piston being reciprocated into the compressing chambers by direct-action from without. These double machines are guaranteed to be of the capacity of 36 ordinary heads of cam and lifter stamps, and engineers will at once see that, inasmuch as the power is directly applied to its work (without the medium of belts and other gearing), the minimum consumption of coal (all other conditions being equal) must be the result.

The COST OF THESE MACHINES (including boiler) is about ONE-THIRD OF THE ORIGINAL CAM AND LIFTER STAMPS, to do the same work.

ROTARY STAMPERS SUPPLIED ON THE SAME PRINCIPLE, WITHOUT STUFFING BOXES OR GLANDS, WHERE RUNNING GEAR EXISTS, OR WITH HORIZONTAL CONDENSING ENGINES AND BELTS TO DRIVE THEM, IF PREFERRED.

Also, SOLE MAKERS OF STEPHENS' PATENT PULVERISER.

MINING AND OTHER MACHINERY CONSTANTLY ON SALE,

NEW AND SECOND-HAND.

The "BURLEIGH" ROCK-BORING COMPANY

(LIMITED),

100, KING STREET, MANCHESTER.

RICHARD MOTTRAM, Secretary.

For the Sale of the "Burleigh" Rock Boring Machinery, and also for Sinking Shafts, Cutting Tunnels and Levels, and General Rock Blasting Operations by Contract.

References permitted to—

Messrs. BOLCKOW, VAUGHAN, AND CO. (LIMITED), Middlesborough.
" THE DOWLAIS IRON COMPANY (LIMITED), South Wales.
" THE EBBW VALE STEEL, IRON, AND COAL COMPANY (LIMITED), South Wales.
" THE CRUMLIN VIADUCT WORKS COMPANY (LIMITED), South Wales.
" T. T. J. WALLER, Esq., Railway Contractor, Gisburn, near Skipton.
" TURNER AND SON, Limestone Quarries, Kiverton Park, near Sheffield.
" THE CLIFTON AND KERSLEY COAL COMPANY, near Manchester.
" THE ST. BRIDE'S WELSH SLATE AND SLAB COMPANY, Haverfordwest.
" THE WARTON LAND COMPANY (LIMITED), Silverdale, near Carnforth.
" THE MONTIPONI SOCIETY, Turin, Italy.

The following letter has recently been received from the Ebbw Vale Company:— Ebbw Vale Works, Monmouthshire, July 5th, 1878.

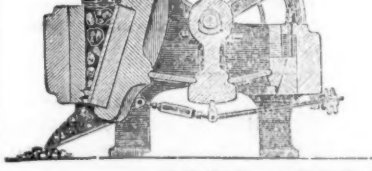
GENTLEMEN,—I have much pleasure in stating that in the execution of your contract to drive, for the Ebbw Vale Steel, Coal, and Iron Company (Limited), a cross measure Drift from the Old Coal to the Rock Vein Coal, in the Glyn Pits, at Pontypool, you did so with dispatch, and to the entire satisfaction of all concerned. The distance driven was 453 yards in about 13 months. Yours faithfully, ROBERT JORDAN, Mining Engineer, Ebbw Vale Company's Collieries and Mines.

[The size of the above heading is 9 ft. by 13 ft.]

The "Burleigh" Machinery can be seen in operation at Manchester any time, by giving a few days' notice to the company.

BROADBENT'S

Patent Improved Blake Stone Breakers.



GUARANTEED NO INFRINGEMENT OF ANY PATENT.

AWARDED PRIZE MEDAL,

In competition with the best-known Stone Breakers, September 7th, 1876,

Formerly Manufacturers for the late H. R. Marsden, having made for him in less than four years 336 Stone Breakers.

ESTABLISHED 1836.

Prices and particulars on application to the Patentees and Sole Makers,—

ROBT. BROADBENT AND SON, STALYBRIDGE.

British and Foreign Safety Fuse Company,

REDRUTH, CORNWALL,

MANUFACTURERS OF

SAFETY FUSE,

FOR MINING AND QUARRYING PURPOSES.

PRICES ON APPLICATION

Original Correspondence.

CAPE COPPER COMPANY'S ORES.

Sir,—The explanation sought for by one of your correspondents is very simple. These ores are brought to market rich—from 30 to 33 per cent.—and of copper of a very superior description. Now, there is no comparison between the cost of reducing such ores to pure metal and that of reducing English and other foreign ores containing from 4 to 15 per cent. of copper. The saving of fuel in the roduction process is very considerable. Smelters cannot afford to pay much for these low ores, and hence it is that the Cape ores sell at 2s. per unit above the price of the lower qualities. In fact, the Cape ores are about as valuable per unit as ordinary 48 to 50 per cent. regulus, and they are the most useful ores we have for raising the standard of a good furnace mixture. Occasionally small parcels from other mines equally rich are imported, and fetch equally high prices, but they are mere driblets compared with what we get from the Cape.—*London, Dec.* 2. W. W.

P.S.—We now hear from the Cape that in the new shaft in course of sinking at a considerable distance from the old workings the lode has been struck, thus proving the existence of an enormous intervening body of ore. This is at the Ookiep Mine, and both the Spectakel Mine as well as that of Narrap on the property are becoming more and more productive.

RICHMOND MINING COMPANY.

Sir,—I ask you in common fairness in next week's Journal to allow me to contradict the erroneous statements made concerning me in your issue of the 16th inst.

I must deny most emphatically, and on authoratative documents I hold, that I had anything to do with the appointment of the late Committee of Investigation; that I ever went out of my way to become associated with that committee; that I was ever forced on the company by Colonel Steuart or any shareholder; that I went out in the first instance (in March, 1876) under an agreement with the company that I was to receive 2500*l.* a year, besides a bonus of 1000*l.* if I made the dividend amount to 20 per cent. on the par value of the share capital; that I was ever interested with Col. Steuart in any coke business; that I have sought to supplant Mr. Probert; or that I have asserted that the company had no title to the mine and property in Nevada.

I will state the facts as briefly as possible, and I assert that these cannot be controverted by anyone who cares to express an honest opinion on the documents and records in the office. I left the States with my family finally (as I then believed, and as I will show Mr. Probert believed) the end of August, 1877. I arrived in London on Sept. 7, 1877. The next morning (the 8th) I called on Mr. Hopkins, and learnt of the appointment of the Committee of Investigation. I told Mr. Hopkins I had left America for good, and had decided upon going to the Cape of Good Hope, and I showed him a letter (of which he took a copy) I had received from Sir Bartle Frere inviting me out there. As I was obliged to delay my departure for three months owing to domestic affairs, Mr. Hopkins urged me to spend that time in accompanying the sub-committee to Nevada, stating that my doing so would be a relief to the board, and would make it much easier work for the committee; and on the evening of the same day he addressed me the following letter, which expresses everything:—

44, Coleman-street, Sept. 8, 1877.

My Dear Brereton,—At a meeting of the committee held here this day the enclosed resolution was passed unanimously. We all hope that you will be able to accompany the sub committee and give them the benefit of our services. Please let me hear from you to this address either by telegram or letter on Monday.

R. M. Brereton, Esq. Yours, very truly, George Hopkins.

Resolved—That it is desirable, if possible, to retain the services of Mr. R. M. Brereton to assist the committee in making their investigations into the affairs of the company, and that an offer be made to Mr. Brereton, who has just arrived from Nevada, to return there with the members of the committee who are deputed to inspect the works at Nevada. The payment for Mr. Brereton's services to the committee not to exceed 500*l.*, with an additional 100*l.* for expenses.

I did not know the members of the committee, except Mr. Hopkins and Colonel Steuart. I accepted the above offer on condition that my services would not be required beyond a period of three months.

To show that Mr. Probert knew I was leaving Nevada finally for the Cape, and up to that time he had no hostile or sore feeling towards me, and had shown no cause to accuse me of having wished to supplant him, I will quote from his own letter to me, dated July 12, 1877, wherein (in consideration of my loss of time and expenses of nearly 18 months) he made me an offer to take charge of the property during his and Mr. Rickard's absence from Eureka in attending the lawsuit.

The shareholders and the board know you, and have confidence in you, and I cannot but think that they would be well satisfied with the arrangement, while I should feel relieved to know that there was someone here who would watch closely, and thwart, if possible, the machinations of our enemies around here. If you think of going by way of London to the Cape you can take Eureka en route, and it will hardly be out of your way.

In reference to my engagement by the company in 1876 it is not true I was either forced upon the company or I was to have a salary of 2500*l.* a year, with a bonus of 1000*l.*, or that I was to sit at Mr. Probert's feet to be educated by him. In February, 1876, I held an important appointment in Australia, and I was persuaded by the Chairman and Deputy-Chairman of the Richmond Company to give up this appointment and go out to Eureka. I was shown a letter from Mr. Probert stating he wished to retire in the Spring, and that Mr. Rickard was not competent to succeed him. The agreement concluded between the board and myself is shown in the secretary's letter dated March 10, 1876, and also in the following resolution passed by the directors at a board meeting which was held on the 22nd February, 1876:—

Resolved—That the proposition of Mr. R. M. Brereton as contained in his letter of February 16 to Mr. Hopkins be accepted, subject to an alteration of the date of his departure.

The proposition referred to was the following:—

I am prepared to go out by the steamer of the 24th inst., and to stay a couple of months at the mine for the purpose of examining the property, and finding out if I can manage it to the satisfaction of Mr. Probert. For this I ask 500*l.* from the board; also an agreement in writing that if I am able to manage the property, and can do so to the satisfaction of Mr. Probert, I shall receive the appointment of general manager for the company out there, with a monthly salary of $1000 gold for a term of one year.

I can state positively, and I hold documents to prove it, that the board, being fully persuaded at the time that Mr. Probert meant to leave, were prepared to appoint me as general manager *ab initio* without any condition in reference to Mr. Probert's consent or approval, and that I made that condition of my own free will, and in a complimentary feeling to Mr. Probert.

In the same way, when immediately on my arrival Mr. Probert informed me that he felt agrieved at the action of the board in sending me out to succeed him, having written to Mr. Hopkins to say he had altered his mind, and wished to remain on until the autumn, I voluntarily and at once agreed to give up the two months probation I had stipulated for, notwithstanding that I had given up the Australian berth, and was thus thrown suddenly out of employment. The Chairman and members of the board know that I never accused them of any breach of faith with me in this matter, and they always gave me credit for behaving most forbearingly and well under very unforseen and disappointing circumstances. Indeed, up to July last the best possible feeling existed between the board and myself, as many can testify to.

I deny the statement that I had all along openly or covertly sought to supplant Mr. Probert, and it is quite clear from the official and private correspondence that neither he nor the board ever thought of accusing me of this previous to the result of the committee's investigation. It is right that shareholders should know that last Easter, before the committee's report was in print, I wrote to the secretary, Mr. Akers, stating I wished to contradict the statement made by certain shareholders that I was seeking the Richmond position, and he informed me that the board had already done so. I also wrote to a member of the board on Aug. 13, requesting him to deny very distinctly that I was desirous of Mr. Probert's position, and that what I had written in the papers I had written with no improper motives. The words I used were—

"I pledge you my word as a gentleman that nothing the board could ever offer me would persuade me to accept the position, whatever might happen to Mr. Probert."

I deny that I was ever directly or indirectly interested with Colonel Steuart in any Colorado coke, or in any other coke whatever. I never believed that Colorado coke could compete in quality and price with the best English coke. I do not believe that Colonel Steuart had a dollar invested in Colorado or any other coke beyond the interest he held in the railway which was to open out the Trinidad district. I regret that he did not make this matter clear at the meeting held on the 13th, as well as contradict the mendacious statement that I was ever interested with him in it.

I can appeal to the board's letters and cablegrams to Mr. Probert and other documents to show that I was appointed English coke agent for the company, and to show clearly how Mr. Probert himself understood the matter I will quote his own letters to myself. On August 11, 1877, a few days before I was leaving Nevada for good (as he and I then believed) he wrote me as follows:—

I have just received a letter from the Chairman, stating that Mr. Bower had made arrangements by which he could deliver coke at San Francisco at $11 (eleven dollars) per ton, and requesting me to give my views on the subject. I shall refer him to his former correspondence, wherein he authorised me to make arrangements with yourself, but of course, if you are not in the field, it does not matter who supplies the coke, and the lowest bidder must get the contract, with certain stipulations as to quality, &c.

Again, on July 12, 1877, he had written on the same subject—

I am really astonished at the action of Mr. Bower with reference to the supply of coke to this company after the very distinct understanding with yourself on this subject. For my part, I consider the company committed to you as their agent for the supply of English coke, if ever the article should be required here, and I should have been prepared to give you a contract for as many tons as we could safely order on the termination of this unlucky lawsuit (if favourable) which has so deranged for the moment all our plans.

I emphatically deny that I sought to prejudice the sub-committee against Mr. Probert, or that I caused them to delay their arrival at Eureka by making pleasure trips, fishing excursions, &c. I deny that there was a single 24 hours unnecessary delay in going to Nevada after leaving New York.

The original intention of the committee was to make their report at Eureka, so that Mr. Pulbrook could take it back with him in November to London. Both Colonel Steuart and Mr. Bayliss had gone out with the full intention of spending the winter on the Pacific Coast. This, therefore, was one of the chief reasons for seeing the Eastern refineries and smelting establishments before going to Eureka, and as it involved going to Chicago, St. Louis, Omaha, and Salt Lake, with two days in each place to see the various works and to collect information and statistics, I do not think it possible for any one, however active and fond of work, to have done it with more economy of time.

I deny that I have ever in any of my letters stated that I considered the company had no title to the mine and property in Nevada. What I did state was the following—that the Eureka Sentinel of June 27 last had editorially asserted that Mr. Probert under the Nevada incorporation legally held and could retain possession of the property as against the English shareholders if he chose, and that statement had never been contradicted; also, that the bye-laws of the Nevada Richmond Company (which have not been amended) gave the president of that company autocratic and independent powers which were inconsistent with the true interests of the English company; also, that by the transfer deed of Feb. 20, 1877, the London board had actually yielded up, for the time being, all practical control of the property and of the management in Nevada, and had never communicated these facts to the shareholders.

I maintain that these are true statements and facts, and that they are borne out by available documentary proof. I hold letters from some of the principal shareholders stating that in their opinion I had done right in giving the shareholders an insight into these matters.—*Nov.* 28. R. M. Brereton.

OUR EUREKA LETTER—No. II.

THE RECENT RICHMOND FIRE TO PROVE AN UNMIXED BLESSING—THE NEW WORKS, THEIR PLAN AND CONSTRUCTION—THE FURNACE TO BE A UNIQUE FEATURE OF THE NEW WORKS.

Sir,—With two brief exceptions (one since last week's writing) the weather has been remarkably fine since the occurrence of the late fire. This has been very wisely turned to account in hurrying forward building operations, so that the furnaces and machinery might be snugly housed before the winter storms of Nevada should set in in earnest. With the works covered in, as they will be in a brief while, we can afford to laugh at the northern ice king, and to set at defiance his fiercest blasts.

The new works, which are now being fast crystallised into shape and tangible proportions, continue to grow apace under the vigorous manner in which they are being pushed forward, and this anxiety to get them in early readiness is so apparent on the part of our worthy manager that I experience little doubt that a resumption of operations will have taken place probably before these jottings are editorially considered. Will not this announcement have a wonderful effect on holders of Richmonds? Many of these gentlemen (ladies too, perhaps, as with us free and easy folks of this coast), no doubt, have been for some time past seated on the "ragged edge," "nearing a clouded brow and a dissatisfied air," hanging, "like Mahomed's worn-out old coffin" between the upper and the nether worlds, between hope and doubt, worrying and fuming through the winter of their discontent. Be patient, gentlemen, Rome was not built in a day, neither were those grand pyramidal monuments of the Egyptian deserts fashioned in an hour. Time completes all things, and in time, too, the Richmond Works will stand completed, a fitting monument to the zeal, the untiring energy, and executive ability of the man who planned and directed their construction. It is all well enough to preach Patience sitting on a monument, &c., as if it were the easiest thing in the world to be patient. It is, however, certain that, as a virtue, it is more frequently preached than practised. But to assume a virtue which one has not appears too much like appropriating the livery of Heaven to serve the Devil in, as do many of our sanctimonious ones. The modern stock sharp and mining speculator, however, never do such things; their virtues are never paraded, and the good they do, like a light under a bushel, is hid from the world. How is it across the crested waves with you? Are the ursine and taurine forces of your Stock Exchanges as steeped in virtue as are those of our own ones located in the gay metropolis of St. Francis, "down by the sad sea waves?" If they are, and to wind up this unprofitable homily, it is not unlikely that they are more frequently troubled with Bicard's disease—a chronic need of money—than they are with any exalted longings to become virtuous.

Good sometimes flows from evil, in the same manner that success sometimes follows disaster. The Richmond fire was a great and unexpected disaster; but those who at first believed it to be such, as did the writer, now think differently, believing that it well eventually prove an unmixed blessing to the company. Paradoxical as this may appear, it will, I am convinced, be substantially verified by future results.

To illustrate. According to original plans the furnaces ranged at right angles to each other, the water-jackets and hydrosicle furnaces northward, and the stone furnaces westward from the original initial point of location, the site of furnace No. 1. This arrangement, though far from satisfactory, had the same as have a good many other things in this world to be patiently borne with on account of matters which will readily enough suggest themselves to your readers. The transformation is now, however, completed, and, thanks to the fire-fiend, the judgment and the genius of manager Rickard, it will for all time exercise an appreciable influence in both promoting and cheapening all succeeding operations in smelting. The furnaces as now being built all range northward, one after the other from the said initial starting-point of early days. By this wise arrangement both coal and oil can be supplied them much more economically and expeditiously than was formerly the case; but, as the proverb says, eaten bread is soon forgotten, so it is not improbable that in thy forgetfulness thou has not thought of these things, seeing that they are so little removed above mere trifles. Good management, my friends, means economy, vigilance, prosperity, and dividends; bad the reverse of all these. Success follows in the wake of the first—ruin, swift and sure, in the wake of the second. The former presupposes brains, intelligence, ability, and experience to be amongst the intellectual possessions of managers; the latter their non-possession of them.

Make a note of the foregoing, my gentle fault-finder, and when leisure permits make out also a list of the English ventures which have been from time to time set in motion in this country during the past decade or more, and, if you can, find out what proportion of them have survived, and what number have been sunk in oblivion, brought to untimely ends, under the blighting influence of incompetency and of bad management? Happily for the Richmond this has not been the case of late years. Not so with other concerns, however, standing solitary and alone amidst the hills of Nevada, Utah, and Colorado—sad, but fitting monuments of the folly and short-sighted policy which in a measure have led to their barren failures; besides, the machinery as now in place cannot, owing to location and room, fail to act more effectively than in its old position.

But, while extolling the present state of things, we ought to remember the credit due to old furnaces, whose unexampled bullion record for the past two years, at least, ought to be remembered in connection with the management of the past four years. If to labour zealously and indefatigably on behalf of the company's interests be worthy of remembrance, praise, and thanks then it is safe to say that the present management deserves well at its company's hands. But, exclaims some captious kid-gloved reader, who probably knows as much about such things as a Hottentot knows of Arabic, "What has the management of the past four cycles effected for the Richmond that should inspire one with a desire to lavish eulogiums upon it? What has it effected?" Much, O sapient, but inconsiderate, reader that merit sincerest acknowledgments. Has it not replenished an empty treasury, developed wealth, given hope to the doubtful, and supplied the sinews of war for its legal encounters; added acquisition after acquisition (all valuable) to its original purchase, and, what is of greater value in the eyes of shareholders, has it not abundantly furnished the wherewith to fill their purses in the shape of gold ducats from their dividends?

Contrary to expectation, by the Journal I note that the fire, the loss, the stoppage, though forming a strong combination of untoward occurrences, did not affect the value of the company's securities neither very much nor very long either. There was no good reason why they should. I have elsewhere in this letter shown that the burning of the old works, so far from having been a great calamity, will ultimately prove a great blessing. The loss—time not included, though time is money in this land of sagebrush and silver—is a mere trifle, and it will yet be pruned down to so attenuated a figure that it will appear like a drop in a bucket contrasted with the ever-increasing resources of the company.

Why, the bullion extracted from the foundations of the old furnaces alone, and now piled up in the yard, as referred to in my last letter, will it is considered by good judges be ample to liquidate a very large proportion of the current expenses. Besides, it must not be forgotten that of the 190,000 bushels of charcoal which had been binned 40,000 bushels at least—probably more—were saved, thus proving that the flames were not entirely victorious, notwithstanding the inflammable character of the commodity amidst which they reveled. The loss in itself is trifling; but were it even greater nervous gentlemen holding Richmonds need have no fear that the friendly services of that court of last appeal—the winding-up court—will ever have to be called into requisition so long as the bottom of Ruby Hill remains intact. But it is just possible that capital for partisan purposes may yet if it has not been already manufactured out of the late disaster, to the great detriment of the company's interests both in London and here. We all know that men sometimes play to get even. We cannot ignore the fact, too, that both vanity and pride sometimes play an important part in warping men's judgment, and in giving colouring, force, and direction to their thoughts. The human heart becomes at times a very turbulent member of the human organism.

The demolished works, called into existence as they were at a period when, to say the least, men's minds were permeated with remarkably crude notions regarding the reduction of silver-lead ores were a nuisance, having been planned and constructed by and under the supervision of early managers, one at least of whom it is safe to say knew as little of the requirements of smelting as an African bushman did of the grand epic of Homer. The defects of the old works could not, of course, be remedied without tearing them down, and this course could not be countenanced in view of the cost; therefore, the management of recent years had simply to acquiesce in a state of things which it could not subvert without entailing loss on the company. But this state of things no longer exists. The new works, even as now seen in their incipient stages of construction, promise to fulfil every requirement, and in a hygienic sense they promise, too, to be even as great a boon to the furnace-hands as they will be to the company, though the results to accrue to the latter cannot be over estimated. I have not the honour of being either a prophet or the son of a prophet—nevertheless, my judgment tells me that many benefits will flow from the plans and improvements of Mr. Rickard, whose ability and experience have brought order out of chaos, and harmony both of design and detail out of incongruous surroundings. I write this in simple justice to a man whose greatest ambition it is to acquit himself honourably of the great trusts imposed upon him, and that he is doing this is within the knowledge of everybody here. Ability, like blood, will tell. He has not only remodelled and enlarged the furnaces, of which two are now well under way towards completion, but he has introduced other improvements calculated to greatly facilitate their being operated with less expenditure of both time and labour than were the old ones. They, as originally built, interposed no barrier whatever to the free leakage of bullion from their wells into the seams and interstices of their foundations. Under the new order of things this waste will be done away with entirely and forever.

As now being erected each furnace foundation which has a slight elevation above the surrounding surface has been provided with a substantially cast-iron plate, cast in sections, the better to fit and handle it. These are firmly bolted together in place, and the joints so formed caulked in such manner as will effectually prevent the flow of metal through either the sides or bottoms of the furnaces. The side and corner plates—the latter of which are quarter-circle castings, giving to the exterior of each furnace an exceedingly symmetrical oval shape—rest in grooves prepared for them in the bottom castings. By this contrivance not only the bottoms but the walls and higher sections of each cupola are rendered more than ordinarily strong, besides completely preventing the escapement of lead in any considerable quantity. Above the horizontal or bottom plates is laid a solid lining of fine rock, upon which in turn, when the furnaces are completed, is to be laid the composite stuff for the bottoms. Each furnace will have an interior measurement of 5 ft. by 8 ft. 4 in. in the clear, and the blast will be supplied by nine tuyeres, four on each side, and one on the rear end—while the reduction capacity of each is gauged at 70 tons per diem, or an aggregate of 210 tons for the same period.

From the foregoing, I fear imperfect description, enough will, I think, be gathered to demonstrate the many advantages and perfections which they will possess when finished not possessed by those which they have displaced. The entire works are to be covered in with corrugated iron, specially ordered from Pittsburg, so that no fears need be entertained that any more fires will ever again have a chance to disturb the equanimity of the good people of the Richmond, nor yet to interpose a barrier, however temporary, to its future operations.

And now to glance at other matters. It has been said that the people of Eureka were prejudiced against the company. Why should this be? Do persons or communities generally become prejudiced against their benefactors? Hardly, if capable of entertaining the least sentiment of gratitude. The Richmond has been always looked upon as the chief stand-by of the camp, and, unlike its neighbour at the north end of the town, it always has been an impartial employer of labour, its officers having no sympathy whatever with a sentiment which would ostracise one class of men, because of nationality and other prejudices, while affording encouragement, labour, and substantial support to another class of men. Besides, who is there that will deny that much of the prosperity which has marked the past, and marks the present, too, of Eureka's career has not been derived from both the unflagging and extensive operations of this company. Moreover, the unparalleled yield of its property has been instrumental in removing from the minds of British investors much of the injurious and unjust prejudices enter-

tained by them against American mining properties because of their losses in connection with some of the howling, yelping felines foisted upon them by a few unprincipled sharpers.

People may boast about public sentiment being inimical to English incorporations, and particularly so to the Richmond. This is all bosh, sheer nonsense, and transparent humbug, of which no well-informed person takes stock. There is no such scurvy ungrateful feeling animates the people of Eureka; on the contrary, they recognise in the Richmond, in the British Mill and Mining Company of Pinto, in the Mineral Hill venture, and, when it existed, in the Ruby Consolidated too—as, indeed, they do in all such enterprising corporations—friends who furnish them employment and business, and who spend their money in developing and utilising the wonderful mineral wealth embedded beneath their brown and barren-appearing hills. The inhabitants of this section justly appreciate the enterprising spirit which has been displayed by the Richmond, and not since the Look-Out litigation of 1873 were the sympathies of the public for its misfortunes rendered more unequivocally manifest than they were at and since the late conflagration. Men of all ranks and shades of opinion—from the leading merchant, professional man, and mine superintendent, down to the stalwart sons of toil—vied with each other in the matter of giving substantial assistance to stay the progress of the devouring element, and prevent it from extending to other quarters of the premises. By their united aid, too, the boilers, engine, and other less expensive apparatus were saved. The blowers, blast conductors, water-pipes, smoke, dust, and fume condenser—the part in more immediate proximity to the furnaces—however, were despite all efforts rendered so unserviceable that they all will have to be supplemented by new purchase.

And, *apropos* of speaking of the engine, I cannot allow this opportunity to pass without eulogising the judgment and practical experience which instigated its removal from its late subjacent position to its present elevated and altogether most appropriate situation. This change ensures dry steam and lessened cost of fuel henceforth, two desideratums not to be despised. Steam connection was effected a few days since, and the furnaces and buildings are in so forward a stage of construction as to ensure their completion at or about the time heretofore designated (1st proximo). The coal-bin, too, has been rebuilt, and coal receipts resumed, much to the gratification of the carboniferous brigade. The railroad, trestle-work, and ore-bins are also nearly completed, as are many of the other necessary adjuncts to a recommencement of active operations.

Eureka, Nevada, Nov. 4. —— J. D. POWER.

GOLD IN WYNAAD.

SIR,—You were good enough some weeks ago to notice a few very general remarks sent by me to the Times on the above subject, and which has produced further interesting correspondence from time to time. The real nature of the commercial complications to which I alluded have been now set forth, and although delay in the development of what appears to be a prospective mine of wealth is to be deplored. I have no doubt with a little patience and better times we shall hear of the necessary capital being found, and if the enterprise being in full swing with all necessary equipment. The samples of gold to which I referred in my earlier letter have been worked up in the most satisfactory way, and are in my possession, but will go out to India by an early mail. I beg to enclose a cutting from the South of India Observer (the Court journal of the Nilgiri Hill station), from which your readers may be interested to observe the doings of the Governor of Madras at the reefs. I may mention that I am in no way personally interested in this matter, beyond having many friends, brother planters, whose estates lie closer to the reefs tested than do mine, and from a strong desire to see everything done to push a legitimate enterprise, and I hope to reap a large and equally legitimate profit. THOMAS G. GILLESPIE.

London, Dec. 5.

[The substance of the cutting from the Indian paper is given by Mr. Maylor in the subjoined letter.]

GOLD IN INDIA.

SIR,—In a letter from Mr. T. Hughes, which appeared in the Times of Nov. 25, a statement is given showing the average yield of gold from 1192 tons of quartz crushed by three small prospecting companies, in south-east Wynaad; 3·02 dwt. of gold per ton is given as the average from 99·85 tons of quartz crushed by the Wynaad Prospecting Company. It should, however, be noted that an average of 3·02 dwt. of free gold was obtained by the first process of amalgamation. In addition to this, the stone contained pyritous sulphides, with which gold is intimately associated, and which cannot be saved by the first process. From these sulphides an average of 4 dwt. of gold per ton of stone crushed was obtained, thus bringing the total result up to 7 dwt. of gold per ton of stone. It should also be borne in mind, that these results were obtained without any skilled supervision, and principally from surface stone.

The process of amalgamation employed at the Alpha works has been the ordinary one, without reference to the presence of sulphides. A mining engineer (Mr. R. Linden) who visited the works, and tested the residue, or tailings, proved that there had been a loss of 6·2 dwt. of gold per ton of stone: 104 tons of quartz were afterwards crushed at the Alpha works for the Prince of Wales Company, and 100 oz. 9 dwt. 18 gr. of gold was obtained, giving an average of 19 dwt. 8 gr. per ton.

When I visited the Alpha Works in August, 1875, the manager (an East Indian coffee planter) was crushing poor surface stone, and he said it was new sort of work for him, as he knew nothing either of mining or quartz crushing. Mining operations were, therefore, not carried on in a scientific or systematic manner, and it is not surprising that better results were not obtained.

With the assistance of competent mineralogists and mining engineers, there can now be little doubt of the success of the gold enterprise in Wynaad.

On the 7th inst. the Duke of Buckingham visited the Alpha Works and Mr Brough Smyth's laboratory, and examined the stone and specimens which had been collected and Mr. Smyth's reports and assays. Nearly 40 carefully made assays of stone, taken as fair averages from different reefs, had been made by Mr. Smyth, varying from 200 ozs. to the ton to a mere trace. His Grace said that it had been his wish since his arrival in Madras, to visit the Wynaad, but it had not been convenient, and he felt glad that the delay had occurred, as it had given him the advantage of Mr. Brough Smyth's opinion and the scientific results he had been able to lay before him of the mining capabilities of the district, and, as Governer of Madras, it gave him very great pleasure to announce that Mr. Brough Smyth's report was eminently favourable. From the statements laid before him by Mr. Smyth and from his own personal observations, which were so satisfactory, he had no doubt that there was a brilliant future for the country. The results were far more favourable than he ever anticipated, and the richness of the district was beyond question.

Plas Onn, Mold, Nov. 30. —— WILLIAM MAYLOR.

THE GREAT NORTHERN RAILWAY.

SIR,—With a further bank delinquency in the case of the Capital and Counties (formerly the Hampshire) Bank brought under public notice since my last, I shall, with permission, invite the attention of your readers to the undisguisedly deplorable position of the Great Northern Railway Company, as depicted by their report and statement of accounts at their last general meeting, showing, as stated by the first recalcitrant speaker after the chairman and vice-chairman, "the fallacy which pervades the directors' reasoning from beginning to end," calling to his aid the powerful onslaughts of the Times and the Telegraph.

What affects me most directly is the scandalous conduct of the directors in the 30,000*l.* annual loss entailed upon the shareholders through their navigation or canal system, their general manager actually refusing to quote a rate for the conveyance of coal from Nottinghamshire to Boston for transit to London, and not withholding from him the geographical capacity of acquiring information as to the course of the Trent from Nottinghamshire to the Humber. What management is it to charge in their printed rates a lesser toll on coal conveyed to Sutton Bridge Dock than to Boston, which town must be passed, and 21 miles further distance incurred to Sutton Bridge Dock, in both cases for export? What about the 300,000*l.* London, Chatham, and Dover transaction? What returns can be expected upon their contribution to the Sutton Bridge Dock? The Cheshire lines are condemned by the most pugnacious supporter of the directors. I submit that the Lincoln and Spalding line, involving a large outlay, dovetails in with the other management. But the lugubrious and desponding language of the Chairman throws a gloom over the whole report, thus expressed:—"All that we can do is to endeavour to bring the ship into harbour with as little damage as possible, which is all we can hope for."

Well might the first shareholder who addressed the meeting move the rejection of the report, and for a committee of enquiry, which I submit is imperious for the interest of all involved. One indisputable fact remains—the Yorkshire, Derbyshire, and Nottinghamshire coalowners will in self-preservation be compelled to follow in the wake of the co-pioneers of my system of coal transit to London via Boston or Keadby, and the Great Northern will be brought too late to see the folly of their conduct. I have yet to learn that a chairman and a vice-chairman of aristocratic descent are the best adapted to control the management of a large commercial undertaking. To dissect and analyse the accounts in their entirety is impossible without reference to first entries, which will come in due time. The Chairman states they are accused of having spent money on dividends which ought to have been devoted to their rolling-stock. Now, how can the Chairman disabuse the practical intelligence of unbiassed men when he states the engineers work exposed to all weathers? I invite an inspection of the London, Chatham, and Dover, London and South-Western, &c., shops, which will he found covered in. Compelling engineers to work in the open air is a barbarity not practised in Ru-sia, where I have visited the largest engineering and railway shops all covered in, but, shameful to say, is special to a system which will have to undergo a crucial test. WILLIAM JOSEPH THOMPSON.

Fitzwilliam-road, Clapham, Dec. 3

ROCK-DRILLING MACHINERY.

SIR,—I must unwillingly ask for a little more space to reply to the several letters (some of them couched in not the most courteous language) which appeared in the Supplement to last week's Journal in reference to my previous letters. Mr. George Cook asserts that I have a mania for taxing other people with "pirating" my ideas. I have never done so, but on the contrary I have always said, as I say now and honestly believe, that the similarity (or as I think, identity) between the arrangements described in my specification of 1874, and other rock drills subsequently patented, is purely accidental and unintentional. Mr. Cook adds that I laid claim to the Schram valve and arrangement, as also to one lately patented by Mr. Dunn. Taking Mr. Schram first, I have already written that after long discussion and consideration that gentleman purchased my patent, in which I then ceased to have any further pecuniary interest. It would at least appear *prima facie* that my "mania" was not in this case altogether unjustifiable. With regard to Mr. Dunn, it is true that I wrote a short time back pointing out that the specification of his new patent rock drill described an arrangement identical with that of my patent of 1874. It is only justice to Mr. Dunn to add now that he has done me the honour to call here and recognise the similarity (though accidental) of the two arrangements, and that he authorises me to write you to that effect. Was my mania for seeing a similarity (not for taxing other people with piracy) unjustifiable in this case?

Mr. Cook asks me why, if my drill be worth anything, I have not accepted the challenge thrown out from time to time. If he refers to my drill of 1874 he will see that I have no interest whatever in it. If to my new one, I must be allowed to judge for myself how best to introduce it. One thing I promise, that when my conviction ceases that it is the best (as it certainly is the cheapest) drill in the market I will cease to introduce it at all. In the meantime I have evidence speaking in such favourable terms as to its efficiency and simplicity as would surprise Mr. Cook, whose experience seems to be confined to the Eclipse.

To Mr. W. Thompson I will reply categorically and conclusively when he writes in the courteous terms which I have a right to expect so long as I write courteously myself. Messrs. Hathorn, however, have a right to expect a reply from me; and, passing over their quite superfluous introductory inuendo, I will for the third time ask for a plain and unevasive reply to my question. In what respect does the arrangement claimed in the third claim (Eclipse)—the use of ports arranged in the valve box substantially in the manner shown being carried across to opposite ends of same, so that the exhaust steam or air from opposite ends of the valve may be controlled by the groove or recess in the main piston as herein described; and in the fourth claim the means employed for controlling the valve by the exhaust steam or air from opposite ends of the valve box, and without having any connection with the steam or air which is in either end of the main cylinder substantially as herein described—differ from that described in my specification, No. 3342, A.D. 1874, page 9, line 19, as follows:—Another arrangement which I sometimes use to regulate the movement of the small pistons, *l l'*, and the valve, *g'*, is the following:—"I make a small opening through or round the (small) pistons, *l l'*, through which the steam passes, and thence through the passages, *m m'*, to the exhaust. When one of the pistons, *l* or *l'*, has travelled far enough to cover the opening, *m* or *m'*, the steam accumulates outside the piston, *l* or *l'*, and forces it together with the valve to the other end of the small cylinder, *f*. In this arrangement the ends of the passages, *m* or *m'*, should pass into the cylinder, *a*, near the centre of the length of the latter in order to prevent the pistons, *l l'*, from too short a stroke."

Messrs. Hathorn must hitherto have misunderstood this question, for they simply compare the claims in their specification with those in mine, and I need scarcely point out to them that the description in my specification, if it corresponds with their arrangement, is quite sufficient to invalidate their patent without reference to my claims. Messrs. Hathorn will at least acknowledge that I or anyone else have a right to make a rock drill in which the main piston has a groove or recess formed round it, and a valve working in a supplementary cylinder between two small pistons, the movement of the valve being regulated by a small opening through or round the small pistons through which the steam (or air) passes, and thence through two passages to the exhaust pipe, so that when one of the main pistons has travelled far enough to cover one of these two passages, the steam accumulates outside (or behind) one of the small pistons, and forces it together with the valve to the other end of the small cylinder, E, for these are the very words of my specification. They will surely, too, in the face of this description, acknowledge that the valve in it is not governed by the live steam or air, but by the exhaust, precisely as in the Eclipse. My valve did not necessarily have a rod running through a stuffing box and guide piece, and fitted with stops, although I did and do prefer this arrangement very much to Elliott's.

In 1874 I had a working model made which had no such guide or stuffing box, and the valve of which was actuated precisely in the same way as in the Eclipse, its movements being controlled by the exhaust steam or air from opposite ends of the valve box, and without having any connection with the steam or air which is in either end of the main cylinder (Elliott's fourth claim).

A very few words as to the feeding devices, which Messrs. Hathorn and Co. say are so dissimilar that they need not describe them. In 1875 I say (though I did not even then claim it as new)—"I use an arrangement consisting of a square or prismatic bar of steel or other suitable material, which fits freely into a corresponding hole in the piston, and I make this bar pass through a stuffing box or its equivalent in the cover at the upper end of the cylinder, and I then connect it to or form upon it a screwed rod, which passes through a nut in the frame which carries the cylinder, and in which the latter slides. In this way, when the bar is turned round for the purpose of feeding forward the cylinder as the depth of the hole which is being drilled increases; the piston and drill are turned round by the same movement. The bar may be turned round by a handle upon its upper end."

In 1878 Mr. Elliott says—"The upper end of the piston is bored out to receive a fluted nut, through which passes the fluted bar used for rotating the piston. This fluted bar and feed screw are made of one piece of steel, but they may also be made separately, and connected together. The screw passes through a nut which is fastened to the top of the frame, and when the screw is revolved by the crank (handle) the cylinder is carried up or down, as required, and the piston is rotated at the same time." And he claims "The use of a fluted rotating bar and screw formed of one piece of metal or connected together, by means of which the feeding and rotation are made one operation, substantially as described."

Do Messrs. Hathorn seriously mean to say that in these two descriptions there is not the slightest similarity?

Southampton Buildings, Dec. 4. EDMUND EDWARDS.

THE ECLIPSE ROCK-DRILL—AND RELIANCE AIR COMPRESSOR.

SIR,—As the contractors now working the machines at West Basset Mine, perhaps you will kindly permit us to say that the first month's trial came to a very satisfactory conclusion last week, and that so far from the machines being "toys," as stated by "H. W." and "Engineer," in your issue of the 30th ult., their capabilities for hard work, and resistance to wear and tear, have been abundantly proved. Despite the lets and hindrances that naturally occurred in starting machines entirely new to the miners, we have with but one of these drills driven in four weeks close upon 7 fms. of ground, 7 ft. square, and we have no doubt whatever that, accidents excepted, we shall drive with ease 10 fms. during the present month. Our greatest difficulty has been to get the drill bits tempered so as to stand the severe work the "toy" Eclipse exacts from them. We are glad to see the hostile criticisms of "H. W." and "Engineer," for since neither man nor machine that is without enemies is likely to be good for much, such remarks go to prove still further, what our own experience at West Basset is showing us more and more, that the machines have no little merit of their own. An Indian proverb says—"It is no use throwing a stone at every dog that barks," and we, knowing our work at West Basset and elsewhere, must in course of time place Messrs. Hathorn, and Co.'s patents in their proper position in the district, I intend to turn in future a deaf ear to any *mala fide* barking that may be raised.

Truro, Dec. 3. HENDERSON AND SON, C.E.
Agents to Messrs. Hathorn and Co.

ROCK-DRILLS, AND AIR-COMPRESSORS.

SIR,—We have no intention of taking up the cudgels against persons writing to the Journal upon our Eclipse drill or Reliance air-compressor so long as they keep themselves within the bounds of fair discussion; but in the instance of two letters in the Journal of last week, signed respectively "H. W." and "Engineer," from Redruth and Plymouth, we feel bound in our own interests to offer a few remarks, and in so doing we disavow the slightest ill-feeling towards either of the authors of those strictures upon our machines. We utterly repudiate the imputation of casting improper reflections upon any of the authorities at the Dolcoath Mine in respect of any shortcomings of their men, and we now seize the opportunity of thus publicly thanking Captain Josiah Thomas and other gentlemen for their kindness to us, and we hope to have the pleasure of meeting them on some future occasion. We now return to "H. W." and "Engineer," and say to them that if they are the proprietors of any rival rock-drills and air-compressors we shall be delighted at any moment to enter our Eclipse drill and Reliance air-compressor in competition with theirs, notwithstanding their prediction of the ultimate failure of these two machines at the West Basset Mine. We think it would be safer if "H. W." and "Engineer" had let the failure of our machines alone, at least until such failure had taken place. We promise them that the failure they predict will be at a very distant date; so far, we can only say that the contractors for the work at West Basset appear to be satisfied with what they have done.

We are fully prepared to place our drills and compressors in any mines or other works throughout the kingdom on trial, hire, or under any other conditions for the fullest proof of their portability, durability, and thorough efficiency. To use a homely expression—"the proof of the pudding is in the eating of it"—and we confidently abide such a test. Were it not that it might appear that we were desirous of advertising our machines in an unusual manner we could furnish copies of a number of testimonials to their efficient working, extending now over 14 months. We are content to offer to show such original letters to any gentlemen who may think fit to apply here.—*London, Dec.* 4. —— HATHORN AND CO.

ROCK DRILLS.

SIR,—Although I have a very great aversion to anything in the shape of a paper warfare, I must ask you to grant me a space in your valuable Journal to reply to the unseemly attacks in two letters, signed by "H. W." (Redruth, Nov. 27), and "Engineer" (Plymouth, Nov. 28).

To my mind "H. W." is either the proprietor of some rival machine or very strangely interested in one, and if so his dislike to the Eclipse drill and Reliance air compressor is very strongly set forth in his bitter remarks upon the same. Poor man, whoever he may be, I pity him.

I again repeat that my previous letter was substantially true, and that the letter of "H. W." is false entirely. The McKean drill had 60 lbs. pressure to the square inch, and the Barrow drill had on the average 50 lbs.; the Brydon and Davidson drill had 50 lbs.; and the Eclipse drill had 50 lbs. for the first hole, 45 lbs. for the second hole, and commenced with 25 lbs. on the third and last hole—and the man who was working the Eclipse drill perceived that the pressure was low, and accordingly stopped the drill until the pressure again reached 46 lbs., when the drill was again put in motion, and the hole finished.

As to the construction of the drills "H. W." stated that all were worn out with the exception of the Eclipse drill. This is absolutely false, for the Brydon and Davidson drill was a perfectly new drill, and I was informed that the Barrow drill had been thoroughly overhauled for the occasion, as also had the McKean drill; and I understood that the Eclipse was a new one, and I should think that no commonsense man would think of taking a worn-out drill to compete at a trial.

With regard to the selection of the stones "H. W." is in error. The stone laid in the ground at the foot of the apparatus specially fitted up for the Barrow and McKean drills was of a totally different quality of hardness to the one placed for the Brydon and Davidson and the Eclipse drills, as a great many remarked; and there was full proof shown of the superiority of the Eclipse drill in its power of penetration upon the same stand that the Barrow and McKean drills had been operating upon.

I may tell "H. W." that the Eclipse drill is not the only drill that I am acquainted with, for I believe that I have seen most of the known drills at work, and can form a very good opinion of the same without the assistance of "H. W." in any way; and, whatever he may say to the contrary, I have still my opinion, and I trust sufficient good sense, to express it without speaking disparagingly of others—a commodity I think "H. W." is short of.

I now beg to offer a few remarks upon the letter of "Engineer." That gentleman would seem to have a wish to instil into the minds of your readers that he is possessed of second-sight or other means of knowing other people's business; but in this instance the mysterious power fails him, for I am not only not interested in the toy Eclipse, but I do not even know its proprietors, nor have I ever spoken to anyone of them; nor until the meeting at Dolcoath I had never seen anybody belonging to them. Like "H. W.," "Engineer" seems to have some poor spite against the Eclipse machine, but that I have no doubt will be taken note of by the proprietors of that interesting machine.

"Engineer" calls it a scientific toy, and to my mind the mining world wants such a toy, for certainly a more handy machine I never saw; and if "Engineer" had said that rock drills wanted simplicity and lightness with durability he would have been nearer the mark—for portability is one of the essential features in rock drills or in any machine that requires such frequent removals.

"Engineer" states that the hole bored by the Eclipse drill was no larger than one's finger. Does he mean the finger of Chang, or whose? It really seems that both "H. W." and "Engineer" are strangers to truth or fair play. Again, "Engineer" says as a scientific toy the Eclipse has no equal. I am afraid if your readers are to judge that gentleman's knowledge of science by the malignity of his letter they will come to the conclusion that he is somewhat short upon that point, and would do well to read himself up on it; but hard words maliciously spoken generally issue from the low and vulgar mind, and when read by gentlemen who have no ill-will against their fellow-men are tossed on one side with contempt.

In conclusion, I may add that I will leave "H. W." and "Engineer" to their own reflections, for any invectives that they may think fit to launch against the Eclipse drill cannot in any way militate against me.—*Highbury Park, Dec.* 4. H. WILLIAMS.

JOINING LEAD PIPES WITHOUT FIRE.

SIR,—In connection with many industrial processes it is desirable to join lead tubing where the use of fire would be practically inadmissible, and to meet these cases an ingenious method has been proposed by Mr. A. L. Bricknell, of Southampton Buildings, by which he can make a thoroughly reliable and well shaped joint quickly and cheaply without the use of fire, solder, couplers, or other dangerous or costly materials. To do this he first drives a hard wood or metal plug into the bore of each pipe sufficiently large to admit about half the length of a short, thin, hard metal tube having circular threads on its outer surface. The enlarged lead pipe is hammered up a little to compensate for the reduction of thickness by enlargement, and the ends to be joined are rasped or scraped clean and bright on their faces. The tube is then inserted about half way into each of them, and by suitable mechanical appliances they are pressed into contact until they are welded together, being united by cohesion, and forming a continuous homogeneous pipe.

The mechanical appliance which he prefers to use consists of the two halves of of an outer die, held together by two longitudinal horizontal connecting bolts, one on each side, and an inner die, also divided vertically into two halves on a line, which would pass through two power bolts. The outer and inner dies, with the two connecting and two power bolts, and their respective nuts, constitute the press. Power applied to nuts working on the power screws forces the inner die downward upon the thickened end of the lead pipes and effects the operation of cold welding by pressure, as will be readily understood. The nuts are most conveniently turned, particularly in confined spaces, by ratchet wrenches, which hold in vertical grooves or notches provided around the nuts for that purpose; and, as the power bolts are cut with right and left hand threads respectively, the wrenches react upon each other, which dispenses with the necessity for holding the press, and saves the lead pipe from torsional strain. When the joint has been welded, the dies being in halves, are easily removed. The particular office of the tube is to resist the inward yielding of the lead to the force exerted outwardly upon it by the press, and thus compel the lead to receive a much greater pressure than it could otherwise possibly sustain. The grooves or projections on the tube materially aid this result by retarding the escape of the lead from the flanged part of the joint longitudinally between the tube and the press. The use of the tube, which has the same internal diameter as the pipe, also maintains a full and undiminished bore or waterway.

For the purpose of joining lead pipes at an angle to others he casts short and compact T or other suitably shaped junction or branch pipes of lead, and proceeds, as before explained, except that as such pipes may be cast with enlarged and thickened ends it is not necessary to prepare them by enlarging and thickening, as in the case of ordinary lead pipes. These lead castings may be conveniently made in small iron moulds fitted with iron cores, which can easily be removed. Such moulds may be arranged to receive the ends of taps and such like fittings, which may thus be cast into the lead junction pipes. In some cases a small ring or short piece of lead pipe may be cast around a fitting at a distance from its end sufficient to allow of its projecting into a lead pipe far enough to form a substitute or equivalent for the internal tube. When this is done the part of the fittings so projecting must be grooved to imitate the tube it represents. If a fitting is previously tinned at the part upon which it is intended to cast the lead the latter becomes most firmly attached to the fitting, and when welded to a lead pipe, as described, an extremely solid and reliable combination is the result. A final stop or end to a pipe may be a flanged cap or socket of lead welded on the end of a pipe over the interior tube, in like manner as two pipes are joined. It will of course be understood that this is only intended to explain the general principle of Mr. Bricknell's invention, for it will be apparent that other devices may be used for compressing the pipes end to end, and that cams, wedges, or other means, may be substituted for the power screws for drawing the two parts of the dies together. Mr. Bricknell's invention is likely to come largely into use, and is certainly most rapid and cleanly.

Dec. 3. C.

ANGLO-FRENCH PASSENGER TRANSPORT.

SIR,—The constantly increasing intercourse, both friendly and commercial, between England and France renders it essential that the means of communication and facilities for passenger transport between London and Paris should be extended to the utmost. At present we have our choice of rapidity or cheapness; but what is required is rapidity and cheapness combined. The London, Chatham, and Dover and South-Eastern Companies grant a first-class return ticket, *via* the Northern of France Railway, between London and Paris, for 4*l.* 15s., and arrange that the traveller can leave London at 8·20 in the evening, and arrive in Paris at 6·10 the following morning. The London, Brighton, and South Coast and the South-Western charge only 2*l.* 15s. for the first-class return *via* the Western of France Railway, but against this there is the enormous disadvantage that the journey occupies nearly twice the time, the traveller leaving at 8 o'clock or 9 o'clock in the evening, not reaching Paris until 4·30 the following afternoon. For all business purposes this is the loss of a day, as on the arrival at Paris there is only just time to wash for dinner, and after dinner in Paris is almost invariably devoted to plessure. As a consequence of this the London, Chatham, and Dover and South-Eastern lines in England and the Northern of France Railway have practically the monopoly of the business portion of the continental traffic going through Paris, although there is really nothing to prevent the South-Western of England and the Western of France securing their fair share of it.

At present the loss of time by the South-Western and Western of France route is in the sea passage and at Havre, and this might be entirely avoided. I leave the Newhaven and Dieppe route out of the question, because the bar-harbours at each of those ports compel the service to be a tidal one, and render a fixed quick service impracticable. An improved Channel ship has been within the past summer specially designed by Mr. S. J. Mackie, of Westminster, which appears to be all that is required on the Southampton and Havre line to render this route the most popular and pleasant across the Channel. Mr. Mackie states that he has capitalists at his back prepared to build one or a pair of his boats at the price of 45,000*l.* each upon any of the companies trading across the Channel undertaking to purchase them at that price if they perform the journeys regularly at the speed of 20 miles an hour, the railway company not to be required to take over the boats, but to be held free from all liabilities if that mean speed is not attained in the trial trips. Now, the distance between Southampton and Havre is 122 miles, so that the time would be six hours and six minutes, or (say) 6¼ hours. If the passage at this speed could be relied on, the Southampton and Havre route could be made as useful as a business route as that by Dover and Calais, and the loss of the day which now shuts up the Western of France route could be avoided. The distance from London to Dover and London to Southampton are practically the same, therefore the mail train now leaving Waterloo, the South-Western London station, at nine o'clock in the evening could readily be timed to reach Southampton at 11h. 15m. At present the boat starts within 15 minutes of the train, so that it could leave Southampton at 11h. 30m.; it would arrive at Havre at 5h. 45m. the following morning, and the Western of France train would leave Havre at 6h. 15m., arriving in Paris, same speed as at present, at 10h. 30m. in the morning.

Now, this is four hours after the arrival of the train by the Dover and Calais route, but this is more an apparent than a real loss of time. The Southampton and Havre route gives half an hour later in London, which is frequently of great importance to the business man; and as Mr. Mackie's boats would be provided with comfortable sleeping cabins, the traveller would have 5½ hours refreshing sleep on board, half an hour for breakfast on board, and would arrive in Paris fresh and ready for business at 10h. 30m., instead of unrested and worn out at 6h. 20m.; and since even in Paris but little business can be done before 8h. 30m, in the morning, so that the traveller by the quicker route would practically pay 1*l.* per hour for extra speed, which few would care to do. The other question is whether it would pay the South-Western and Western of France lines to acquire Mr. Mackie's boats on the conditions mentioned; it would certanly be worth the trial. All connected with railways know that to carry 20 passengers extra by a train really costs nothing extra; it may, therefore, be asked whether the extra passengers secured would probably return fair interest on the cost of the boats. The first cost of the two boats would be 90,000*l.*, which, to be safe, may be called 100,000*l.* The railway companies ought to have 10 per cent. on this=10,000*l.* per annum. Assuming the boats to run on 300 days in the year, the extra takings must be 33*l.* 6s. 8d. per day to cover the interest, so that if only 20 passengers per day extra were booked, which at 2*l.* 15s. would be 55*l.*, there would be the 10 per cent. interest for the railway company shareholders, and 16*l.* 13s. 4d. per day, or about 5000*l.* per annum, to pay for extra expenditure, wear and tear, and so on. Surely this is a question worthy of the consideration both of South-Western and Western of France shareholders. H. E.

Dec. 2.

RECIPROCAL FREE TRADE—METALS AND MINERALS.

SIR,—I think your correspondent in last week's Journal, "A Lead Mine Proprietor," in some measure answers Mr. Smith's communication as to the large importation of lead into this country—say, 100,000 tons, on which, as is suggested, if only 4*l.* per ton were levied by the Chancellor of the Exchequer it would bring in a good round sum for his Budget; this would then be less than half what America charges as her import duty—9*l.* per ton (and not 4*l.* per ton, as has been misstated). In speaking of the lead trade some few weeks ago, I simply stated that formerly we used to send large quantities of lead to America, but now the United States had commenced sending it to us in cotton ships by way of ballast at quite a nominal freight, thus showing that we were losing one of our best lead customers, and consequently in some measure assisting the present depression. With all due respect to Mr. Smith and the able way of stating his notions on the matter, he may rest assured the purely free importation, especially metals and minerals, into this country requires the serious consideration of our Legislature; and the sooner a Commission is appointed to investigate what I consider mainly the real cause of the long continued unprecedented depression in the state of trade (especially metals) the better—free importation.

Look around, and what do we find is the growing idea of nearly all other nations at the present day—why even greater protection to themselves than ever; this is a positive fact, and cannot be gainsaid. After waiting so many years in the hope of their turning into our free trade notions, we find that they refuse to do so. Are we, then, to stand still to be shot at, and see the various trades and commerce of our countries, labour and capital, virtually annihilated, and not take into consideration the importance of finding out some remedy to prevent this? No doubt, and let us hope the time is not far distant when we shall have a revival of trade; but without some reciprocal free trade we shall not have that prosperity in trade and commerce which we have been wont to experience owing to the rapid growth of foreign competition. We shall see. Time is the revealer of all things.

With regard to the concluding remarks of Mr. Smith respecting the management and a greater amount of work being accomplished in developing our home mines, I almost entirely agree.

Old Broad-street, Dec. 3. PETER WATSON.

"HOW ARE WE TO BE GOVERNED."

SIR,—Before your Journal appears on Saturday Parliament will have assembled, and we shall have found that the Premier has delivered himself of a characteristic speech, and which we may expect to find a due admixture of fun and buffoonery. Lord Beaconsfield is not one to let pass any solemn opportunity without improving the occasion by making everybody laugh. The shadow of death is a most appropriate place for antics. We shall also learn to some small extent not what the Ameer has done to justify a great Christian nation like England rushing into the horrors of an unjustifiable war, but what breach of etiquette the Ameer has been guilty of to offend Her Majesty's Ministers. Never in the history of this country in modern times has such a flagrant violation of constitutional principles been perpetrated as this plunging into the Afghanistan war, and it is very important that this matter should be calmly and deliberately treated, not in the light of a party question, but one of fundamental principles of sound and good government. It is quite true that to the Sovereign alone is delegated by the Constitution of England the power to declare war, but that is a delegation of power never to be exercised as an expression of the Sovereign will merely, or of her responsible advisers, but as embodying the calm, deliberate, and solemn opinion of the people of England. All power is vested in the Crown for the good of the nation, and that the Crown might never engage in a bloody war without the assent of the people the Constitution has vested in the House of Commons, the representative House of the people, plenary power to give or withhold the "sinews of war." It looks very much like an act of treason against the majority of the people for the Ministers to rush headlong into a war without any intimation to Parliament that there existed any cause for going to war. But the Prime Minister and his party do not care a pin for Parliament or the people. The Ameer has offended his dignity and he must be punished. Power takes the place of right. In the time of John the Baptist there was an individual high in station, immoral in character, who would do anything to gratify his passions. He married his brother's wife, and that lady, who was known as the wife of Herodias, was incensed against the prophet for exposing her deliquencies. She had a daughter who could dance well, and knew how to show off her charms to fascinate the king. Instructed by her mother, who was determined to silence John, the daughter, who had so charmed the king that he promised to give her anything she might ask, even to the half of his kingdom, asked him, "Give me, by-and-bye, on a charger the head of John the Baptist." Off went the head, and a foul murder stained all parties concerned. The Ameer, who it is said has many good qualities about him, and entertains most kindly feelings towards this country, happens to stand in the way of the Tories. He has done something, what nobody clearly knows, to give offence, and Her Majesty's Ministers to appease their craving must have his head on a charger. Why, if this great country is to be governed by men who will unsheath the sword without any justifiable provocation the words of Chancellor Eldon may come to the front with emphatic force, "The sun of England's glory will set for ever." Putting party politics altogether on one side, it is high time for the whole nation to bestir itself and solve the problem "How are we to be governed?" It is a very humiliating reflection that in an age of enlightenment, nearly at the close of the ninsteenth century, the English people know nothing about what is going on between this country and foreign powers. Richard Cobden protested vehemently against the monstrous evil of secret diplomacy. The English people have a right to know day by day how they stand with other nations. I remember being closeted with an experienced bank manager one morning, and he asked me to look at the daily balance-sheet, which in a few lines exhibited the affairs of the bank, assets and liabilities, in a clear and intelligible manner. He said it was a great comfort to him every morning to find this balance-sheet on his desk. Now, why should not the people of this country have a daily balance-sheet, showing how they stand in relation to every other country? Oh, it will be said, publicity might imperil important negociations. Yes, but it is infinitely more important that constant publicity should and would infalliby prevent misunderstandings and complications. Secret diplomacy is the curse of Europe, and never until it is swept away can nations have a perfect assurance that all things are going on well, peacefully, and satisfactorily. The greatness and grandeur of England does not depend on her military power, but on her trade and commerce, her manufactures, and in the extension of her trading intercourse with other nations. The population of the world is rapidly increasing, the wants of the world must also be increasing, and if foolish, wicked, and costly wars were to cease for ever—and why should they not?—the whole world would be revolutionised for good. If war and rumours of war were to cease mankind could with confidence and hopefulness embark in every commercial and trading adventure, and peace, plenty, and happiness would infallibly result. If the millions squandered in warfare were laid out in developing roads, canals, and railways in such a glorious country as Africa, where there is produce, minerals, and other articles almost inexhaustible, what a boon they would be to the people of this country. It seems as if the glorious discoveries of Stanley are to be practically useless. War and bad trade seem to be on the brain of Englishmen, instead of amity, friendly intercourse, commerce, and trading. Perish party feeling for the time, and let the nation arouse itself to the settlement of the all-important question of how are we to be governed so as to secure prosperity. Perish imperialism by whomsoever it is fostered. The genius of Englishmen requires the widest expansion of free government, and the unfettered development of free institutions, not the contracted slavery of imperialism. Every Englishman has a right to know what is going on in relation to foreign countries as much as the principal of a large industry has a right to know what is going on day by day in his own establishment.

Any misunderstanding with any foreign Government might easily be rectified by a few telegrams, but secret diplomacy, imperial ruling, can only result in disaster and ruin. When the general election comes let all electors catechise their candidates about secrecy in the management of the nation's affairs, not as an absolute test question, but to secure a healthier state of feeling in Members. Publicity would have prevented the Eastern war. Publicity would have prevented the Afghan war, and for the future publicity will keep everything on the square, reason will have full sway, and all nations will begin to see the wisdom, policy, and supreme importance of learning war no more.—*Ulverston, Dec.* 4. F. G. S.

ELECTRIC LIGHT BY THE LAMP REYNIER.

SIR,—Mr. Hippolyte Fontaine, who is acknowledged to be the first electrician in France (his book on "Electric Light" has been translated in English by Mr. Paget Higgs, LL D., C.E.), published in the Revue Industrielle of Nov. 27, a very interesting article on Reynier's lamp, of which I beg to send you herewith a short extract, which I feel certain will be of some interest to your readers, the more so as your Journal was the first which introduced this new lamp to the public.

Mr. Fontaine says it is a well-known fact that we can obtain electric light by means of the voltaic arc with ordinary regulators, or with Jablochkoff candles, or by the incandescence of a conductor of great resistance, as they have been made by Lodyguine, de Changy, Konn, and other inventors. Reynier's lamp, of which we are going to speak, works by this second mode of generation of electric light. Mr. King, an English electrician, is the first who had the idea to replace the voltaic arc by the incandescence of a conductor; his patent is dated Nov. 4, 1845, and it is a curious fact that this patent mentions already platinum and carbon, the same substances which have been employed since by everyone who has been experimenting to solve this problem.

Mr. Fontaine gives in his article a detailed description of the way in which Mr. King produced the electric light, and also of Mr. Reynier's first experiments to construct a lamp according to that system, and then he goes on to show how the lamps are now constructed after having been much improved; they are easily understood, as they are very simple in construction.

I hope next week to be able to send you a full illustrated description of the Reynier lamp, but it may be stated in the meantime that the Reynier lamp consists of a short horizontal cylinder of carbon, on the periphery of which there rests a vertical pencil of carbon, both the cylinder and the pencil being moveable. This is the principal feature of the mechanism. The lamp is so simple that it is not at all liable to get out of order. The carbon pencils are 2 millimetres thick (the thickness of a pencil lead), and about 30 centimetres (12 in.) long, and last about two hours. Mr. Fontaine adds —"I have seen the lamp lighted by a battery of 12 Bunsen elements, and estimated the intensity of the light about 15 to 20 Caroil lamps. Further experiments with a Gramme machine of continued current and ten Reynier lamps gave a very favourable result." And he concludes his article with these words—"Mr. Reynier's lamp is simple, easily to be used, and moderate in price. We believe that it will be advantageously used in warehouses, &c."

As mentioned before, I will further report as soon as I receive the lamps and have them tested. I hope to receive them in a few days. I very much regret that they did not come in time for the evamination at the Society for the Encouragement of Arts and Manufactures.

Nottingham, Dec. 4. LOUIS SIMON.

THE ELECTRIC LIGHT.

SIR,—The greatest hindrance to the progress of the electric light is that every improvement in the apparatus for producing it, however slight, is instantly made the subject of a patent. The system explained in the following lines, for which I trust you may find space, I do not patent, although I have with the most temporary apparatus got good results from it; and have no doubt that, with but slight alteration, it will prove the most feasible and simplest system of electric illumination yet proposed. Those who have leisure can work it out. The problem of the subdivision of the electric light is not to divide the current, as many seem to think, but so to divide the current that each fraction may retain sufficient intensity to give a good light. The ordinary systems give either a large light or none. One condition of a good electric light is that the resistance of the circuit to the passage of the current, exclusive of the resistance in the battery, should be about 1½ ohm. As the voltaic arc—that is, the light-producing part—has a resistance of 1 ohm, there is only ½ ohm left for the conducting wires. The candle and other systems are attempts to reduce the resistance of the light-producing part below 1 ohm, and are partially successful. If an ordinary gas bracket had, instead of the burner, a piece of T-shaped vulcanite pipe, and the ends of the top stroke of the T supported two strips of brass, each about ¼ of an inch apart, it would make a good support for my lamp. On the inner face of the two strips solder faces of platinum, and provide two small thumbscrews, one passing through each pair. Between the platinum faces insert two thin slabs of, well, say unglazed porcelain, plaster of Paris, lime, or even chalk. Solder to each side of the T top stoke strips a piece of very thin platinum wire, passing zig-zag fashion from the one pair of strips across, in a groove in the plaster of Paris plates, to the other. These strips are connected by wire, one pair to the one pole and the other pair to the other pole of the battery. Such is the lamp. Its characteristics are, small resistance, a clear, soft light, not concentrated in an intense point, but spread over an incandescent surface, no complicated machinery, and little cost for erection or upkeep. This lamp lights itself by simply turning a small handle. Till a cheaper source of electricity is found it is useless to think of large central works. Let a modification of some existing battery be placed where the gas metres are now, and in a closed box. For a small sum a company could call regularly, and on complaint refresh batteries, charging the material to each consumer, who would thus pay just for what he used. At the battery let a small screw worked by a crank lift the plates out of the solution. It might have attached to it an index marked for one light, for two lights, &c. Any domestic servants could learn the use of this little crank in five minutes, and if they did not regulate their current a little by it they only would suffer. Should the platinum wire in the lamp fuse, which it is not likely to do from its position,

it cannot escape being clamped between the incandescent plates. The wires would be branched off to the lamps in the way known to electricians as the "divided arc." Although the above is only a Scotch invention and not an American one, I trust that through your giving it publicity it will lead to something practical being accomplished in electric lighting. JNO. M. M. MUNRO.

Glasgow, Nov. 27.

LEAD MINING IN SCOTLAND.

SIR,—The Leadhills Company do not seem inclined to tell us how much of the 100,000*l.* they will be able to take away with them at the end of the lease. Very good. Still I think these things should have publicity instead of the stereotyped twaddle of mining meetings. "I've mony a time heard," said the faithful wife of a speculator who wanted to go "into slates," "of folk flingin' awa their siller like slate stanes, an I never heard o' folk doing any guid that flung it awa on slate stanes." Let me advise Captain Waters to keep the gold-washing cradle for "the baby."

It is curious how things turn up. What will our American cousins say to hydraulic diggings 270 years ago. At that time Mr. Bowes writes from this same Leadhills (see "Records of Mining in Scotland, page 108)—"May 28, 1604. . . . yet I doe assure yor lon I have wrought more worke than Mr. Bulmer hath done hitherto, resolving what gold I shall gett faithfullie to deliver it to his Mats' use, houlding it inconvenient to this service to bye gold and make shew thereof as gotten in these workes. . . . I have likewise wrought from White's howse in Glangreese gill, north and by easte towards the hight of the mountaine 548 yeards clensing and breaking the rockes in the bottom of the water in that trenshe, in all places to trye if any vaine of gold in the former distance, having discovered nine several leaders to vaynes of lead, wherof sundry doe hold lead and 3 other to copper vaines, one whereof is the peace I certified by lettere to my L. Chamberline in December last that the ould gold washer White told me his father working with the Dutchman saw them bring home nichtlie what they got in the said vaine in a blewe bonnet or capp, for more certain discoverie of such work I have cast furrowes 2800 yards in lenth to convey water, and have maid 2 dames and dreenen away by violence of the water issewing out thereof about 500 tunnes of earth, wth if I had relyed upon trenching could not have been done at so great depth with 10 times so much charges and 6 months longer tyme." AN ENGINEER.

CARDIGANSHIRE MINES—NORTHERN DIVISION.

SIR,—It is most gratifying at the close of the present, perhaps the dullest and most disastrous years ever experienced in mining, to be able to congratulate the shareholders and the mining community connected with them, as well as the landed proprietor on which the mines are situated, of the following facts connected with a cluster of mines, all on the property of Sir Pryse Pryse. The northern mine of this cluster being Cambrian, and they being the northern boundary of the South Cambrian Mines, and these mines forming also the northern boundary of the Camdwr Mawr Mines. Although a very rich course of copper ore was found and portions of the lode in the eastern part of the Cambrian grant by sinking the shaft known as the Esgair-Ffraith engine-shaft under the 10, and from which about 160 tons of very rich copper ore has been sold; the real value of the lode was not ascertained until about three months since, when it was intended to take from under the feet of the men the copper ore on which they were standing, and in order to accomplish this it was thought desirable to blast down a portion of the ground standing to the north for filling up. In doing this a course of rich lead ore yielding quite 4 tons per fathom was discovered, so that at this and the only place for a very great distance a course of ore yielding at present prices quite 115*l.* per fm. is discovered for the future working of the mines. The ore now being broken is not being dressed for market, being, as I suppose, reserved for the hope of better prices. Since the mine has been in the hands of the present company great energy has been shown in sinking the engine-shaft, and if more attention was bestowed on opening out a greater length of ground in the shallower levels, and this should be attended to, the work that has been accomplished could but be satisfactory to all concerned. That this mine must become enormously profitable at an early date admits of no doubt whatever.

I will now treat of its southern neighbour—the South Cambrian Mine. This is a parallel lode to that of the Cambrian, situated in the same measures, and standing south magnetic from it; the lode here, as is the case when the rich discovery I have just described at the Cambrian, is about 18 ft. wide. An adit level has been driven in from the west side of the hill eastward, a distance of nearly 110 fms., and this adit has gained a height of 35 fms. from surface. The portion of the lode carried has for 65 fms. in length passed through a rich course of blende ore, and where the vein was last cut through about 10 fms. behind the present forebreast would yield 5 tons of the richest blende ore produced in Cardiganshire, and will fetch at present price 4*l.* per ton. Tnis lode from its softness and convenience of working, there now being an excellent railroad laid down through the adit, and the level itself cut down to a width of 5 ft. 6 in. by 7 ft. high over the rails can be taken away at 25*s.* per cubic, or 3*l.* 15*s.* per lineal fathom of the width of the vein, and after all expenses of every kind have been amply allowed for would leave considerably more than one-third of the returns as profit for dividends. In extending the adit level eastward, and the present end is much richer than any portion we have seen, the present adit in 70 fms. more would gain a height of 65 fms., and this height must continue in one unbroken line, and without a depression of any kind for 600 fms. in length. Six men can lay open in the present forebreast 6 fms. per month, and at the present yield of 5 tons per fm. would lay open in driving 30 tons per month, and taking an average of only 20 fms. high we should get at 600 tons of blende laid open per month. Before us and under our feet this blende ore will yield and give place to lead ore; this adit is driven on the Eagle Brook vein, and it is contemplated, as the Articles of Association provides for such, to purchase the Eagle Brook Mine, with its splendid field of machinery for pumping, crushing, drawing, and dressing, and unite it with the South Cambrian. The Hafna and Henfilwch also passes through this grant for nearly 1 mile in length, and have been seen at surface presenting every indication of making great deposits of lead ore in depth. In the adjoining grant to the west it produced more than 1,000,000*l.* worth of ore. This mine, the South Cambrian, possesses every facility for being worked by water-power, and there is no doubt on my mind will become a mine in extent and profits equal to any mine ever yet opened in the Principality The next mine I would speak of, and to the south of South Cambrian, is the Cam Dwr Mawr, which has recently been purchased by a Liverpool party. They commenced to sink a good shaft from surface on a good lode of lead ore; this continued to improve every foot in depth, and now at a depth of 10 fms. is yielding 4 tons per fathom. That it will be in the hands of the present company and under proper management become eminently successful admits of no doubt. If we see some of the greatest mines ever worked in the county passing from the hands of those whom they enriched with hundreds of thousands of pounds in another district of the county, it is satisfactory to find that others are not disheartened by such circumstances, but that men and money have been found to continue their working on a more energetic principle than if they have been worked for a very long time before, and should the parties who have allowed these mines to go into other hands at no distant period retire from mining in Cardiganshire altogether there is no doubt that the miners, the merchants, and the landowners would reap a great benefit therefrom. Connected with the cluster of mines I named, I might observe that a single tramway, self-acting, from the Cambrian Mine to Talybont, could be laid down nearly all the way on the present road for a sum of 1500*l.*, and a side tramroad leading through the South Cambrian and on to the Cam Dwr Mine for 750*l.* This would reduce the carriage of ore and material to one-third, and in 12 months from hence, when all these mines are in full work, would pay cent. per cent. on the outlay.

In closing this rather long account I would call the attention of capitalists to the present opportunity for making investments. If properly selected properties are now secured success is placed beyond doubt.—*Goginan, Dec. 3.* ABSALOM FRANCIS.

PARYS MOUNTAIN MINES.

SIR,—Doubtless much anxiety is being felt by those who are interested, and looking forward for the announcement of a discovery in the long level advancing towards and underneath the Great Open Cast. This level has been extended from the starting point 156 fms., and in the last 30 fathoms driven several small branches have been intersected, all of which contain copper and sulphur, but these branches being rather small we could not set much value upon them. During the past week a small lode, about 1 ft. wide, was met with, consisting of quartz, prian, and copper ore of rich quality, worth about ½ ton of the latter per fathom at this point. The ground has recently undergone a change, and from the commencement it never looked so encouraging as at present.

The great mass of veinstuff excavated from the open cast near the surface shows a width of from 50 to 60 fathoms, and the richest part for copper was always found on the south side near the heading, laying upon the clay-slate formation. The end of the long level at the 90 south is now within 20 fathoms, or thereabouts, to the heading, providing the dip of the lodes and strata continues downward at the same angle, as indicated near the upper section of the great workings; therefore it will be seen that the next 20 fathoms driving will prove a very important piece of ground, and thereby solve the question as to the existence of large deposits of mineral in connection with a secondary formation underneath the once celebrated Great Open Cast workings. I would remark that the most hopeful part of this grand undertaking is yet before us, and that all concerned may eventually be rewarded for their patience.

Dec. 4. T. MITCHELL.

SILVER-LEAD, AND SOUTH DEVON SILVER MINES.

SIR,—I have read with much interest the letter of "F.G.S.," in last week's Journal, on the South Devon Silver Mine. I cannot remember ever reading a more explicit statement, and I trust soon to see mining revive, and such a property worked vigorously. There is, however, one point which I cannot understand. The writer speaks of the lode 50 fms. high and 40 fms. in length. Does he mean to say that this is the whole extent of the lode, and how has he ascertained its size? Any further information on these points will be of service. C. E.

DEVON GREAT CONSOLS.

SIR,—The facts elicited at the meeting on the 28th ult. fully bear out the statements of the men during the attempted enforcement upon them of the now for ever doomed five-weeks month, that the mines, instead of working at an enormous loss, were indeed working at a profit; and it is now stated, upon what seems equally good authority, that the arsenic manufactured and held in stock has all along actually exceeded in amount the value of the whole mines and machinery, as represented by recent fallacious quotations of shares. This being the case it has become a matter of general astonishment that constant doleful reports should have been issued instead of congratulations on the fact of the mines having so fortunately withstood the longest and most severe panic ever known in the history of mining. A company that reduces the wages of the working men to starvation point on the plea of poverty whilst in good circumstances; that voluntarily votes grants of remuneration to others, and afterwards begrudges payment, and that holds up its own employees (who have served the best of their lives on the mine) to public derision, can scarcely, it is feared, be complimented on its spirit of generosity, fairness, or manly feeling.

Dec. 4. OBSERVER.

DEVON CONSOLS MINING COMPANY.

SIR,—Your correspondent, "A Mine Adventurer," states at the time the strike was on in May last the company were stocking arsenic, and that there was a concealment of this from the shareholders. "A Mine Adventurer" is or surely was not at that time a shareholder in the Devon Company, otherwise he would not have made such a false accusation against the company, for on reference to the printed half-yearly accounts I have in my possession, and which were submitted to the shareholders at the meeting in the end of May, I find that the amount of arsenic was stated under the head of "Reduction Works"—arsenic, &c.—and in the report of the directors, that with a revival of trade this arsenic would be sold. I will take this opportunity of testifying my appreciation of the conduct of the London board of directors for their activity and determination to surmount the present great depression by insisting on all possible reductions of monthly expenditure, and thus save us as shareholders from putting our hands in our pockets to contribute money in the shape of calls. All I have to say is that if the local management do not carry out the reductions, the sooner we have, I was going to say, a clean sweep the better, but at any rate a very considerable alteration in the management. From information I have received from the neighbourhood of the mine, there is beyond all doubt great reform required, and I regret Mr. Stewart's excellent remarks and proposition for the appointment of a committe of consultation were not carried into effect at the meeting. However, as its further consideration is adjourned until the next half-yearly meeting, I trust in the meantime our directors and local authorities will see that the necessary reduction in remuneration to those employed, and a less number of hours are made, for I fear that we shall not only show a considerable loss on the poor-priced copper ores and arsenic raised this year, but likewise next year, unless we have a considerable reduction made. A SHAREHOLDER.

Plymouth, Dec. 2.

DEVON GREAT CONSOLS MINE.

SIR,—In the Journal of November 30 on page 1321 it is stated the resolution proposed by me for the immediate reduction of the present preposterous expenditure on the Devon Consols Mine was not seconded. I must ask you to correct this misstatement in your next by the publication of this letter, and for the benefit of my brother shareholders, as well as yourself, refer you to page 1334 of the same issue, and in this full report in your own paper you will see it was seconded by Mr. Horncastle. The following was the resolution:—"That in the opinion of this meeting a consultative committee of three members, with power to increase to five members, should be forthwith formed to take into consideration the present enormous expense compared with the business done, and to reduce the same at least one-half if after inspection such be found expedient." I feel certain had I pressed my motion I should have carried it successfully by a large majority, as I know many present would have supported me, and I only echo the opinions of many shareholders, some of them residing in the district in which the mine is situate (but a still larger number of shareholders elsewhere), that to continue the present extravagant expenditure is only to invite disaster and to court ruin. At page 1321 you observe Mr. Thomas Morris' income from this company is 520*l.*, in addition to which he has a house provided for him. This is one of the important questions to which I desire to direct my brother shareholders, for I, as well as many of my brother-shareholders, consider it is an entirely useless office, and that his services can be easily dispensed with under the present depressed state of affairs. This, with the sale of the residence, which is said to be worth over 3000*l.* (in which I am informed he resides rent free), would form favourable items in a curtailment of expenses to the company.

At the meeting Mr. Morris stated he would be prepared to resign. I certainly think (with all due respect to him personally) in the interest of the company the sooner he does this the better. I could state a good deal more on this subject, but sufficient for the time. In the same column you state this—"During the coming year they expected to raise 30,000*l.* of copper and arsenic, which would leave a good profit." Now, unless the monthly costs are enormously reduced, as all desire, this 30,000*l.* I unhesitatingly state will not only not leave any profit but a very serious loss, and I beg the shareholders to bear this in mind, as I shall keep a most scrutinising eye on not only the local management but on the directors generally, and shall refer to this matter at our next half-yearly meeting. I further state unless these necessary reductions are made in the number of agents, clerks, pitmen, timbermen, smiths, carpenters, masons, and on the surface generally in the various departments detailed in the monthly cost-sheet (which I have examined carefully at the company's office), it is impossible to continue working this mine in the present depressed price of minerals. I cannot too strongly impress on the local management the desirability of forthwith giving immediate attention to these absolute requirements, for many shareholders have paid very high prices for their shares, and, as openly stated at the meeting, will not respond to a call. It is with this view I reiterate my remarks at the meeting, without the slightest personal feeling to anyone, and with the one object that in these unprecedentedly depressed times we should endeavour to keep the mine afloat in the hope of better times.—*Gravesend, Dec. 4.* H. C. STEWART.

A GRATEFUL COMPANY.

SIR,—At meetings which are held 200 miles away from the mines matters are constantly put in such a light by speakers who, probably, never saw a mine in their lives, as to lead the public to believe that the workers at the Devon Great Consols are simply a body of idle, untrustworthy imposers on their employers. As a result of these continued representations, the wages of the men were, in the first place, reduced to the extent of a month a year, which they submitted to without a murmur; then came down a mandate that they must at once submit to the infliction of an old, detested system of payment, which had been abolished for years throughout the Western Counties, and in the noble stand made against this act of oppression they had to encounter a further loss of two months earnings. As if the misery they had endured was not sufficient to crush them into the depths of despair, an additional reduction, equal to another month in the year, was thereupon absolutely enforced, and under this burden the men are now labouring on, in the constant dread of further horrors, it may be, to follow. All this has been conceived and accomplished, and the men have struggled sorrowfully on, whilst at the very time the largest stock of arsenic ever seen in the world has been accumulating and stored up for future profit day by day before their eyes. Not content with this behaviour to the men, a personal affront was offered at the last meeting of shareholders to the venerable gentleman who for upwards of 30 years was chairman of the company, and whose conduct of their affairs throughout commanded the confidence and respect of the whole of the mining world.—*Gunnislake, Tavistock, Dec. 5.* LOOKER-ON.

BODIDRIS LEAD MINE.

SIR,—Can any of your readers give me a reliable statement as to the character and width of the lodes of Bodidris Mine already discovered, and let me know what amount of lead has been raised since the last annual meeting? I see no account of this in the Journal, and some information on this point might be useful and acceptable to others besides myself.—*Dec. 4.* ZETETES.

NEW CATHEDRAL MINE.

SIR,—In the Journal of Nov. 30 you state that the response to the application to the public to take shares had not been quite so great as was anticipated, and thereby leading your readers to believe that the shares have been offered to the public. Now, this is not the case, for not one share has yet been so offered. The fact is that, knowing "from several eminent mining captains" the great value of this mine, I attended the sale in August, 1877, and ultimately purchased the property for the benefit of the old shareholders, who wished to join a new company. To show my faith in the mine, I have taken the whole of the purchase-money in shares. We have, therefore, sufficient capital subscribed for the erection of a 70-inch engine and engine-house; and, as the shaft had just reached the lode a short time before the death of the secretary of the late company, it is more than probable that there will be no necessity at present to offer any of the remaining shares to the public. JAMES LABY.

Blackheath, Dec. 4.

[For remainder of Original Correspondence, see to-day's Journal.]

CAKEMORE CAUSEWAY GREEN AND LOWER HOLT UNITED BRICKWORKS AND COLLIERY COMPANY (LIMITED).

The following report, just received, confirms in the fullest manner what has previously appeared in the *Mining Journal* as to the value of the property:—

GENTLEMEN,—In compliance with your instructions, I have made careful inspections and surveys of Cakemore Colliery, also the brickworks in connection therewith, and I am enabled to report upon the same as follows:—

SITUATION.—I consider the estate admirably situated as a mining property, being in close proximity to the great iron and glass making centres with their numerous manufactories, having its own wharf on the Birmingham Canal, and being within easy access of the Rowley station on the Great Western Railway, together with the populous character of the adjoining districts—Rowley Regis, Old Hill, Dudley, Smethwick, West Bromwich, &c.; I consider the situation and facilities upon the whole exceptionally good, and whatever output your colliery may make, there will be no difficulty in disposing of it.

PLANT.—The plant, comprises a very good 40 horse power winding engine, with two boilers (one quiet new), good head gear, machine house, offices, workmen's cabins, stables, store room, carpenters' and smiths' shops, and all the usual and necessary conveniences of a good colliery. On the whole, I consider the plant good and adequate, and capable of raising 1500 tons per week.

ACREAGE.—The property I find comprises a mining area of 105 acres, including the Lower Holt and Causeway Green Collieries, and judging from the quality of the thick coal now being laid open by the exploring gate roads, it will prove to be, beyond doubt, a most valuable property indeed, in fact should the 85 acres of maiden mine contain throughout a corresponding sample of thick coal to that being driven into and proved, you may well lay claim to having in your possession one of the very best "takes" remaining unworked in the whole of this important county.

TWO FOOT COAL.—This is the first working seam of coal in descending order in the South Staffordshire coal district. I have ascertained that it is too thin at Cakemore Colliery to be worked to a profit.

THE BROOCH COAL.—This coal is also too thin to be worked to a profit. It may, possibly, be workable in parts of the estate.

THICK, or TEN YARD COAL.—On inspection of your mining plans and pits, and from information derived from the agent in charge, I find you have an area of 85 acres of this celebrated coal in the solid, all of it supposed to be of good average quality. It would be superfluous on my part to describe it. Its characteristics are too well known to need de-cription, being proverbially the strongest and very best of iron-making coals. The 3000 yards or more of exploring gate-roads which I inspected are proceeding in a westerly direction from the shafts; the thickness of the coal is from 18 to 22 ft.; this will give a yield of 25,000 tons per acre, and the total cost of getting it, including timber and all incidentals, should not exceed 4*s.* per ton coals, or 1*s.* 3*d.* per ton slack. An output of at least 1000 tons per week ought at once to be made, upon which, bad as the trade now is, there ought to be a profit of something over 100*l.*

THE HEATHEN COAL AND GUBBIN IRONSTONE.—At present there are no workings opened into this coal, consequently I have no more than the ordinary data of the district to guide me in reporting upon it. It is usually from 3 to 4 ft. in thickness, and is a coal admirably adapted for making cokes or for gas making purposes. The Gubbin ironstone (which is very rich, and contains a large percentage of iron) is invariably worked in conjunction with this coal; the average yield of coal per acre is about 3500 tons, the total cost of getting should not exceed 4*s.* 6*d.* per ton for coals, or 1*s.* 3*d.* per ton slack, or 9*s.* per ton ironstone; in a normal state of trade this ironstone realises readily 24*s.* per ton.

WHITE IRONSTONE.—This ironstone in the adjoining neighbourhood is very good, and yields from 1000 to 1500 tons per acre; cost of getting from 6*s.*, ordinary selling price from 15*s.* to 20*s.* per ton.

FIRE-CLAY.—Clay, which is considered to form a part and parcel of the celebrated Stourbridge district, is being worked within 2½ miles of Cakemore Colliery —at Codsall Colliery, Old Hill. The whole of the far-famed fire clay and fire-brick works are situated between your colliery and the town of Stourbridge, six miles away to the west. The fire-clay I am told has been proved in your estate, and if it be anything approaching the average quality (and I know of no reason why it should not) of the Stourbridge clay your property is destined to become of very great value indeed. The fire-clay in the Stourbridge district proper is being rapidly exhausted, and in the course of a very few years the neighbourhoods of Cradley, Old Hill, and of your colliery will have become the great source of supply to the trade. I have known recent offers of 1500*l.* per acre as a royalty declined for fire-clay in the Stourbridge district. If the fire clay at Cakemore Colliery be of the average thickness of 4 ft. it will yield 10,000 tons per acre, and may be fairly estimated to produce an average percentage of superior parts—Best pot-clay and Seconds: Best clay sells at 40*s.*, seconds 20*s.*, and brick clay (termed the offal) at 6*s.* per ton. The average cost of getting it, including all incidentals, is about 2*s* 9*d.* per ton.

TERMS.—I consider the terms of the minimum rent, merging into a 1 9th royalty, exceedingly moderate. I have known 1 5th commonly paid for Maiden Thick coal.

RESOURCES.—If the Thick coal under the 85 acres of maiden ground should maintain its present distinctiveness and thickness throughout I compute it as containing 2,125,000 tons of Thick coal, 300,000 tons of Heathen coal, 200,000 tons of ironstone, and 800,000 tons of fire clay. It is by no means improbable that the New Mine coal also exists in your estate.

BRICKWORKS.—The mines of clay and marls are all that can be desired, and

the brickwork, plant, and machinery the best and the most perfect and complete in the whole district; a very superior article is being produced as a natural result. The brick-making business ought, and will undoubtedly, form an important element in the company's operations. The colliery will be benefited thereby to the extent of all the refuse slack being utilised, and made the best on the ground.

Taken as a whole, the colliery and brick business combined, I do not know another "take" to equal it. Considering the large area of maiden Thick coal, and that it is comparatively dry, requiring no pumping machinery (which is always expensive), the freedom of the estate from the deep drainage rate (6d. per ton), the great facilities for outlet, together with the cheapness with which the mines can be worked, and the bricks made, I consider the property such as the company need be proud of, and a property from which good returns ought to be made.—*Dennis Park, Stourbridge, Nov.* 28. J. SKIDMORE, Jun., M.E.

Meetings of Public Companies.

PENSTRUTHAL CONSOLS TIN AND COPPER MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Cornhill, on Friday, 29th ult.,

Mr. JAMES LABY in the chair.

Mr. EDWARD ASHMEAD (the secretary) read the notice convening the meeting. The report of the directors and the accounts were taken as read.

The following report was read from the manager:—

Nov. 27.—Herewith I beg to hand you my annual report of these mines. The Highburrow shaft, since the last annual meeting, has been sunk 18 fms. 2 ft. 5 in., besides cutting cistern plat, trip plat, casing and dividing the shaft, putting in penthouse, fixing the pumping lift, and making everything complete from the 72 to the 88 fm. levels. In the first part of the sinking the lode was disordered by a large elvan course passing through the shaft, but in the last 3 fms. the lode has again become more settled, and taken its regular underlie north, where it has an exceedingly good appearance and most congenial for the production of copper ore, and is well worthy of future trial. The 88 fm. level, driving east of Highburrow shaft, has been driven 7 fms. in the elvan. I think in about 6 or 8 ft. further driving we shall be clear of the elvan course; in about 10 fms. east of this end, in the 72 fm. level above, we have a pare of men stoping, the lode being 7 ft. wide, producing fair quality tinstuff and a little copper ore. In this level the lode is largely charged with gossan. The 88 fm. level being 16 fms. deeper we may reasonably expect a decided improvement in the lode for the production of mineral. The 88 fm. level, driving west of Highburrow shaft, has been driven 7 fms., and we have 12 fms. further to drive before we get under the run of ore ground seen in the 72 fm. level above, when we expect to intersect a good lode of copper ore. We shall push on this end as fast as possible with a full pare of men. The 72 fm. level, driving west of Highburrow shaft, has been driven since the last meeting 23 fms. 5 ft. 4 in.; for the last 14 fms. we have passed through some good copper ore ground, which, when properly opened, can be taken away at a profit. The lode in the present end has changed its character, not being so good for copper ore but very much improved for tin. This is a very promising end. We have commenced a rise in the back of this level, about 9 fms. behind the present end, which is up 5 fms. through a good lode of copper ore. In about two months from this time we shall communicate this rise with the 58 fm. level above, this will lay open some good stoping ground and enable us to increase our returns. The 72 fm. level, driving east of Highburrow, has been driven 25 fms., but for the present is suspended, the men being engaged in stoping about 18 fms. east from the shaft, on the junction of the copper and tin lodes, here the lode is 7 ft. wide, and producing fair quality tinstuff. The 34 fm. level, driving east of Highburrow shaft on the tin lode, has been driven altogether about 40 fms. The ground through which this level has been driven has been very productive for tin throughout, yielding more tin than any other part of the mine for the same distance. The lode in the present end is 2 ft. wide, and worth for tin 6*l.* per fathom. In the last few feet driving the lode has entered a splendid channel of white granite, and has every appearance of an early improvement. This end is about 20 fms. behind Greere's engine-shaft, and by continuing this level it will throw great light on the eastern tin ground, this being the only level driven at present in the tin part of the lode. The 46 fm. level cross-cut, driving south from Highburrow lode, has been driven 44 fms. during the last 12 months—driven altogether 60 fms. From what we can see at surface the 40 ft. tin lode underlie north about 1 ft. in a fathom, and if this underlie continues we shall intersect the lode in about 10 fms. further driving. About 4 fms. south of the 40 ft. tin lode we have also a copper lode, from which we have broken some good parcels of copper ore in the bottom of the adit level, but were obliged to suspend operations by the influx of water. We have opened during the past twelve months in shafts, levels, and winzes 180 fms., about 80 fms. of these drivages have been explorative ground, which has not given us any assistance in our returns. We have sold 46 tons 15 c. 0 q. 7 lbs. of black tin and 18 tons 9 cwts. 2 qrs. of copper ore, but for the continual drop in the standards for tin we should have shown much better results. The first parcel of tin realised 44*l.* 5s. per ton; if we had obtained this price throughout the year it would have given us 322*l.* 3s. 5d. more on the twelve months sales. The copper ore standards have also dropped in like proportion.—WM. POLKINGHORNE.

The following report was also read:—

Wheal Peevor, Nov. 27.—The following is my report. I am pleased to say since my previous visit a great improvement has been made in the development of the mine at points which cannot fail in the future in making an increase in your returns. I think my better course will be (instead of commencing at the bottom point of operation in the mine, which is my usual way of doing) to explain to you first where this increase of stuff is to be had from. In the 72 fm. level west you have driven through a run of mineral ground for about 20 fms. in length, the chief portion of which is copper. But the lode in end at present appears to be changing from copper into tin. I took a sample from it, and find it will make a produce of about 56 lbs. of tin to the ton of stuff. The lode is of a most congenial character, is about 4 ft. wide, and soft for breaking, and when properly laid open will pay for working, as it can then be stoped for 30s. per fathom. Nine fathoms behind this end is a rise in the back which is up about 5 fms. I find it about 11 fms. altogether to communicate to the 58 fm. level (being 6 fms. more to rise), this being the point where I calculate your increase of stuff will be from when communication is made. I would, therefore, strongly urge that it should be accomplished as quickly as possible, as you could then put two or three pares of men to stope the ends and produce large quantities of stuff in excess of what you now have. In at least two months from the present date this should be accomplished. If a pare of men were put to sink in bottom of the 58, directly over the rise, it might be effected even before then, and your position greatly improved. The 88 fm. levels east and west are in from shaft about 7 fms. each. I think from the nature of the ground in the eastern end it is through the elvan, the lode shows signs of improvement. However, a better opinion can be given of this in the course of 2 or 3 fms. further driving, as the lode would then be more settled. The end looks kindly for mineral, and looking at the very large lode in bottom of the 72 fm. level—about 15 fms. in advance—I consider the prospects rather encouraging. The western end has not as yet met with the lode still in the elvan ground, but is of a favourable character, I should still force it on, as the object here is about 20 fms. west of shaft. Nothing has been done in the shaft since my last visit; the lode appears to be more settled for the last 3 fms. sinking, but before doing anything more here I would recommend proving of the points you have in operation with the greatest dispatch possible. I consider you have about 10 fms. more to drive the 46 cross-cut to intersect the 40 ft. lode, where, judging from its superficial appearance, something good would be met with. In conclusion, I would say the mine, I consider, is very much improved since I was underground before, more energy having been brought to bear upon the tutwork bargains, in opening up in profitable directions, and with the price of tin improving, which is most likely to continue, this, with the increase of stuff which you will have in about two months hence, the small loss which you are now making per month will be considerably reduced if not altogether. It is very pleasing to me that I can give you such a satisfactory report.—W. T. WHITE.

The CHAIRMAN said there had been an average loss of 115*l.* a month, but supposing tin rose 10*l.* more than last sale there would be a corresponding decrease of loss. The captain had been doing his best to find out some more favourable points, and expected to succeed in this in about four months, and, therefore, he hoped at the expiration of that time the company would be in a very different position to what it was now.

Major WALKER asked what was the present price of tin?

Capt. POLKINGHORNE said the last parcel was sold at 36*l.* 12s. 6d. per ton; this was three weeks ago, and the price had gone up since. In a few days the price would, in all probability, go up higher, and he thought they might fairly hope to get better prices.

A SHAREHOLDER asked the captain whether he relied upon copper or tin for the paying part?——Capt. POLKINGHORNE said there was both copper and tin, but they derived most from tin. In the last 18 fathoms sinking in the shaft they had had hard ground in the elvan course, but at the bottom of the shaft the lode had now formed itself, and was looking better.

Mr. LITTLE, who was present, stated he was not a shareholder, although his name remained on the books, he having transferred his shares to the late Mr. Green; in fact, the shares never were his, but only held as security for a loan.

The CHAIRMAN said they were glad to see Mr. Little, and hoped he would stay, as he was so well acquainted with the mine.

Mr. LITTLE said that if there was a mine in the county of Cornwall which would turn out a great mine he believed it was Penstruthal. There were finer lodes there than anywhere, and there was no other mine adjoining which could drown it, and its own water was not heavy.

Mr. A. MURRAY—in reply to an observation by a Shareholder—said the general experience in the Gwennap district had been that when the elvan course had passed through copper lodes it had generally shrivelled them up; the elvan was of volcanic origin, and it generally took about 10 fathoms on each side to get into the original lode which contained the copper.

The SHAREHOLDER asked if they had gone beyond the 10 fms.?——Mr. MURRAY said not yet. The shaft was difficult to excavate; but now that they had got below it the lode was gradually opening out, and was improving, and when the shaft was resumed he had no doubt that, in a few more fathoms they would find a great improvement. The lodes opened out larger and larger as depth was attained. The levels must be driven out in the first instance.

The CHAIRMAN enquired how it was that there had been such a considerable falling off in the produce of copper?——Capt. POLKINHORNE said the lode had not yet settled to make long shoots; up to the present they had found short shoots, but no doubt the long shoots would be again found in depth. As they got deeper, and the lode became more defined and settled, they would get more copper.

The CHAIRMAN then formally moved the adoption of the report and accounts.

The SECRETARY—in answer to Mr. DOUGLASS—said the calls in arrear were not taken as a good asset, but were separated from the other assets, and put down for what they were worth.

Mr. DOUGLASS referred to the item of "Instalments on debentures to receive," and asked whether they would be paid?——The SECRETARY: They are the instalments on debentures which are taken, payable between now and February next.

Mr. DOUGLASS said that whilst they had been passing through these depressed times, and copper, tin, and other metals going down to a mere nothing, they still continued to work the mine on the same high pressure principle they had always done. Would it not have been more advisable to reduce the number of men, and thus reduce the cost during the present period of low prices? The less work that was done just at present the better, in his opinion, it would be for the shareholders.——The CHAIRMAN said he had thought the same thing, but the captain stated that it was necessary to keep a certain amount of work going on.

Capt. POLKINGHORNE stated that about fifteen months ago they did abandon a great many of the drivages, and had worked on a small scale since that date. They had now got through the dead ground. At the 46 cross-cut they had nearly 80 fms. of driving to try to cut the copper lode; they had driven about 60 fms. out of the 80, and to stop those points which they had been driving so long, and which will be driven out in four or five months, would be a pity.

The CHAIRMAN said they had been trying to make discoveries, and had reduced the cost to the lowest possible point consistent with good working. In Greene's time four times as much was spent.

Major WALKER said he went to the mine, and stayed there a week, and they reduced the cost from 450*l.* to 250*l.* a month, which it was now. They had, in fact, starved out the mine to the extremest limit, and if they had starved it further they would have been biting their own noses.

Mr. A MURRAY said they must keep the pumping-engine going. There were three engineers, and they must have two or three men in the shaft, and to keep them on involved a considerable sum. At present the loss had been on account of difficulties which the captain had had to contend with in the new shaft, but it had been reduced to about an average of 115*l.* a month. The directors believed they had now come to the climax of this loss, and he was pretty well sure, after the valuable reports read to-day that they were on the turning point. They were very near the great lode to the south, which might turn the whole fortune of the concern. This was the champion lode of the district, and nowhere else would they find such wonderful backs left by the ancients. They were of immense width, and the granite was stained with a solution of copper, which must come from some deposits near.

The CHAIRMAN said that after what they had heard he thought the shareholders would be of opinion that the directors were acting rightly. (Hear, hear.)

Mr. DOUGLASS: Yes; after this explanation I must say I think you are doing right.

Mr. LITTLE pointed out that they could not curtail the dead costs, and the whole of the progress was from "the point of the pick" or borer. They had been doing a great deal of dead work, and they hoped shortly to come into something which would well repay them for past labour. The dead work would always be a satisfaction to them, and pay them well in the end. If they could do six months' work in three months it saved three months' dead costs.

Letters were here read from a large shareholder, urging that the mine should be kept open, and that the present policy should be pursued, and from another large shareholder urging a contrary course.

Mr. WALTON (a director) said that if they had to go over the same course again he should advise that the same policy should be pursued. The expenses were kept down at the lowest possible point. The expenses in London were under 10*l.* per month, and the directors had not only taken nothing, but had no desire to do so until they could make it a profitable concern. All the directors were large shareholders, and did not attempt to separate their interests from those of their fellow-shareholders. (Hear, hear.) The directors had taken the advice of Capt. White, the manager of the neighbouring Wheal Peevor, which was paying 20 per cent., even at the present low price of tin, and the directors considered Capt. White's report highly favourable.

Mr. WINSER (solicitor) replied to a question raised as to what value attached to the assets of the company, and stated that Van Consols was about to amalgamate with Glyn, and the indebtedness to this company was acknowledged, and would, he expected, be paid; the terms of agreement were, in fact, "payment of all claims in full." As to the calls in arrear, the full amount due would not be recovered, or anything like it. More than 1000*l.* were owing by three gentlemen well known in London; he was doing his best to get in the money, but was not very sanguine of final success.

The CHAIRMAN said he thought it was the unanimous opinion of the shareholders that they should continue working the mine. (Hear, hear.) When he came to the office that morning he was not at all certain that it would not be better to cease working for the present, but after what he had heard he thought it would be seen that the directors had pursued a wise policy.

Mr. PARRY then seconded the motion of the Chairman for the adoption of the report and accounts, which was put, and carried.

Mr. STURGE proposed the re-election of the directors. He had no doubt that those gentlemen had given their best attention to their duties, and though the results were not, up to the present, so good as could be wished, at any rate the directors had shown their faith in the concern.——The motion was seconded by Mr. DOUGLASS, and carried.

The auditors, Messrs. Brandt, Stansfield, and Co., were then re-elected; and a vote of thanks having been passed to the Chairman, the meeting broke up.

NEW CATHEDRAL MINING COMPANY.

The statutory meeting of shareholders was held at the offices of the company, Cornhill, on Friday, 29th ult.,

Mr. JAMES LABY in the chair.

Mr. E. ASHMEAD (the secretary) read the notice convening the meeting.

The following report upon the state of the mine was read from Capt. Davey:—

Nov. 28.—The engine-shaft is sunk 6 ft. below the 52 fm. level, or 70 fms. from surface; the lode in the same is 3 ft. in width, composed of copper, mundic, fluor-spar, and peach; in sinking the last 6 feet the lode greatly improved both in size and appearance, and the ground at the deepest point undergoing a change and getting favourable for mineral. Previous to this we have been sinking through an elvan course, where the lode has maintained its size, but irregular in production of copper; but the ground at present is a mixture of elvan and granite, and in sinking a little deeper we shall be entering free of the former and into the latter, which is more congenial for mineral in this locality, and I am still sanguine that as soon as this is attained we shall meet with a good course of copper ore. The 52 fm. levels east and west are driven about 6 ft. from shaft, and the lode is similar to what I have described them above. The 42 fm. level west of shaft is eastward about 20 fms., the lode is 4 ft. wide, composed of gossan mixed with copper ore. It was at this point that we met with a cross branch, which was the means of letting out the influx of water, and not having an adequate engine to compete with the same we were obliged to suspend operations, consequently this point has never been proved. The 42 fm. level east is eastward about 30 fms.; the lode is 2 ft. wide, composed of gossan, and in driving this level we have met with several patches of gossan ore, which speaks of good results to be met with at the level below. The 30, 20, and 10 fm. levels have been kept in abeyance, the lodes being composed of gossan. We were fearful that in extending the engine would not be able to cope with the water. We still continue to make good progress with the drivage of the adit level west, which is now 3½ west of cross course. The lode is still unsettled, and divided into three parts, the main part being on the footwall, and is composed of gossan and fluor-spar. The other two branches, which formerly were 6 ft. distant from the footwall, are now 18 and 3 ft. apart, and in the course of driving 2 or 3 fathoms they will intersect each other; and I am of the opinion that the intersection will be the means of an early improvement. We have also a stream of water issuing from the drivage which indicates a porous and larger lode ahead of us. The ground is undergoing a change, and getting a little harder, but this we may expect as we get beyond the influence of the cross-course. Since we have commenced operations with the new company we have driven and secured 12 fms., and repaired the adit in several places, which I think now is all right for the winter. I should advise you if capital is forthcoming to purchase a suitable engine, as you can never buy cheaper than at the present, and you will find they will greatly advance in prices against spring. I might inform you that the property is good, and well worth the erection of a suitable engine. Such indications and productions have not been seen in any other mine in Cornwall, and we are only now the depth (70 fms.) that other neighbouring mines met with their riches.—STEPHEN DAVEY.

After the reading of the report a question was raised as to whether the recommendation in the report to place a new engine on the mine should be adopted. In the result it was decided to obtain one, and also tenders for the erection of the house in which it will be placed.

Mr. WINSER (solicitor) explained the conditions of the purchase, as printed at the end of the Articles of Association. It was also stated that the company had never been put before the public, the shares having been offered and subscribed for as yet by shareholders in the old company.—Thanks to the Chairman concluded the meeting.

TINCROFT MINING COMPANY.

The general meeting of shareholders was held at the mine on Tuesday,—Capt. W. TEAGUE in the chair. The usual preliminaries were disposed of, and the accounts and agent's report submitted.

The CHAIRMAN mentioned that at the last meeting there was owing to Messrs. Bolitho and Co. 13,534*l.*, whereas now it only amounted to 10,160*l.* The total balance against the mine was 14,904*l.*, as against 18,461*l.* at the last meeting. That he considered was moving in the right direction.

Mr. A. HINGSTON stated that at the last meeting a resolution was passed requesting the purser to apply to Lord Robartes for a reduction of the dues during pleasure.

The CHAIRMAN read a letter he had received from Mr. Pearse Jenkins, of Trewergie, Redruth (Lord Robartes' agent), who stated that he had laid before Lord Robartes the application for a reduction of the dues on account of the present low price of tin, and was authorised to say that his lordship had consented to reduce the dues 1-30th during pleasure, on condition that the adventurers keep sinking the main engine-shaft, and the sump or downright shaft, by continuously employing at least five able-bodied men in each shaft. With reference to the erection of boring machinery in the mine, and the objections raised by the purser to Lord Robartes' conditions, under which his lordship would contribute a sum not exceeding 1000*l.* towards the erection of machinery and other appliances, the writer proceeded to state that, having taken the opinion of a person of high standing in mining matters, who considered that the conditions were reasonable, his lordship, therefore, did not see his way to making any alterations in them, but was willing to receive any application they might make to him, which did not in any way affect the principles of the conditions.

The CHAIRMAN said the shareholders would see that by complying with Lord Robartes conditions his lordship consented to give 1000*l.* towards the erection of machinery. Another portion of the letter, with regard to the carriage of the tin, would affect the shareholders to a small extent. Lord Robartes could not consent to the deduction of 10s. a ton for the carriage of tin; but in consideration of the present low price of tin, and the fact that the deduction had been allowed for so many years, his lordship had consented to allow from the date of the notice sent them some two years ago a reduction equal to the actual amount paid for carriage, after deducting for the amount paid by the purchaser.

The CHAIRMAN remarked that he had taken the matter up more from principle than anything else, seeing that it was allowed before ever he had any interest in the mine. It was then resolved that the best thanks of the shareholders be offered Lord Robartes for consenting to accept a lower rate of dues during pleasure, as well as consenting to provide for one-third of the cost of boring machinery, not to exceed 1000*l.* Any hard and fast rule might tend to damage the interest of lord and adventurers. The extent of the tutwork operations must depend on the prospect of the adventurers and the price of mineral.

Mr. A. HINGSTON asked whether the boring machinery would be provided at once, presuming that the matter was settled between them and Lord Robartes?——The CHAIRMAN replied that he did not think it would be obtained during the next six months. He thought they ought to try and better their position before they ran any further into debt.

Mr. HINGSTON moved a vote of thanks to Capt. Teague and the agents of the mine for the manner in which they had carried out the working of the concern.——Mr. LUCAS seconded, and it was carried unanimously.

Capt. TEAGUE, in reply, said that the calls had come in exceedingly well, and in fact there was only 84*l.* 15s. of the first instalment remaining unpaid, more than one third of the whole amount of calls had been paid, and there was hardly a dissentient to the call. At the next meeting they would be called upon to credit four months' costs upon three months' returns, and, therefore, they would hardly think it possible for them to pay costs under such circumstances. There was a quantity of copper ore in stock which would be sold during the next three months. It was his opinion that on the next occasion they would stand on equal terms as they did that day, notwithstanding that they would have four months' costs. The mine was not so nearly done as many people thought. If the price of tin was the same as it was in the early days of the mine he would be able to hand over as good dividend now as then.

CARN BREA MINING COMPANY.

A general meeting of shareholders was held at the mine on Tuesday—Capt. W. TEAGUE in the chair. The usual preliminaries were disposed of, and the statement of accounts submitted.

The CHAIRMAN stated that had it not been for the interest charged a profit would have been shown on the three months' working of the mine. At the last meeting there was a balance against the mine of 31,279*l.* 1s. 5d., but it had been reduced to 26,012*l.* 6s. 9d., so that over 5000*l.* had been cleared off. They owed to the bankers at the last meeting 23,136*l.*, but now it only amounted to 19,700*l.* There had been a difference of nearly 1*l.* per ton in the price of tin, which taking it in round numbers would amount to something like 220*l.*, with the advance included in this quarter, so that taking everything into account, and with the at present hopeful view of the tin market, he thought there was every probability of their doing quite as well, if not better, at the next meeting.

A SHAREHOLDER enquired what was being done with the boring machinery?

The CHAIRMAN said that with regard to the boring machine they were still under a contract, which would expire at the end of the present month. They were sinking the shaft, but not so fast as they had reason to expect they would; in fact, he did not think that they were sinking so fast as the contractors themselves had anticipated. They were sinking at the rate of about 8 ft. a month. It was worth but very little to the mine, and he thought that it was a hindrance to the boring company.

Mr. JOHN CARTER asked whether the Chairman thought they could not sink as fast by hand labour?——The CHAIRMAN believed they could sink equally as fast.

Captain PASCOE wanted to know how the Chairman could account for it?

The CHAIRMAN explained that it took so long to get the machinery in position when it was once removed. Every time they blasted the machine had to be taken out of the shaft, which occupied a considerable time.

[For remainder of Meetings see to-day's Journal.]

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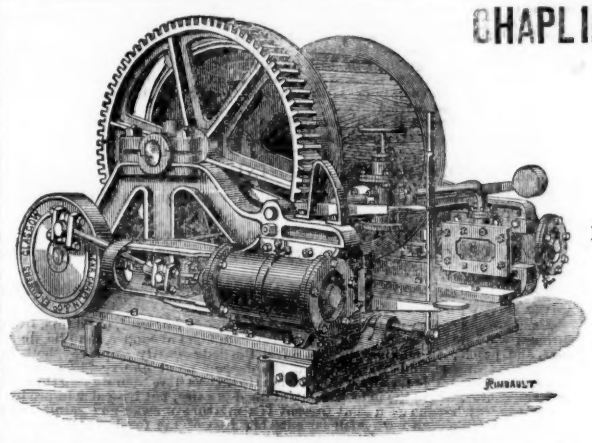

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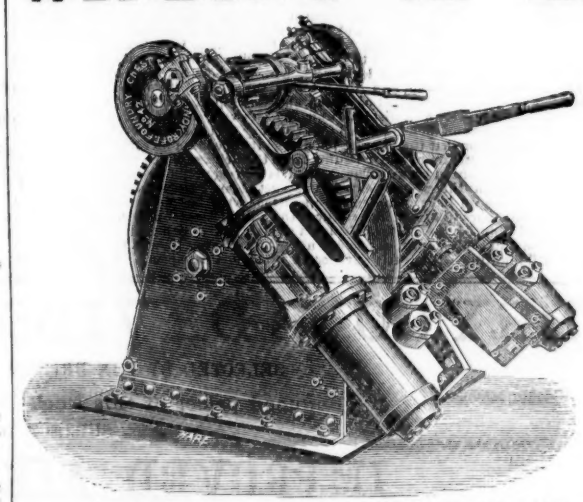

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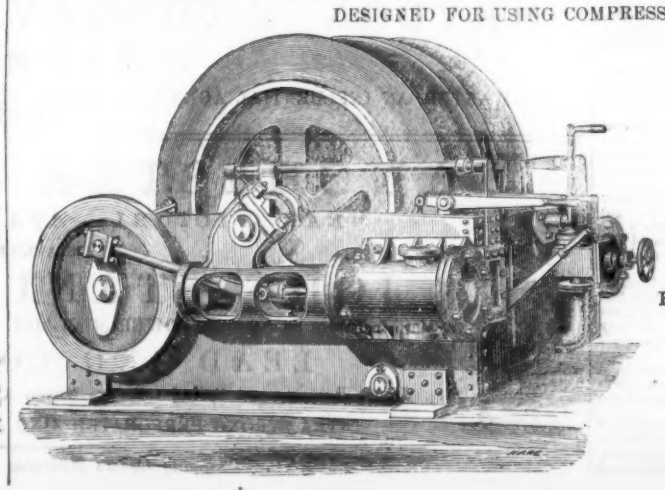

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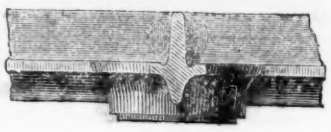

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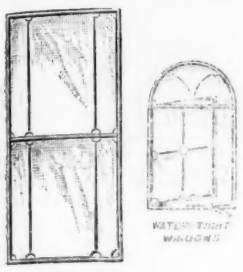

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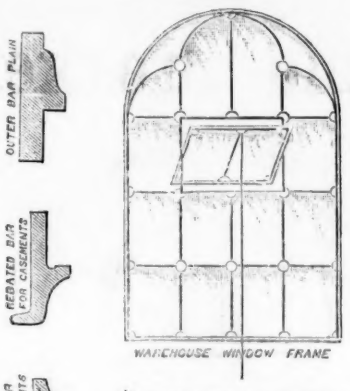

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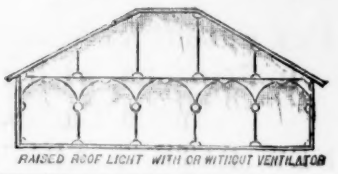

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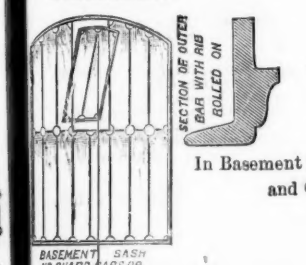

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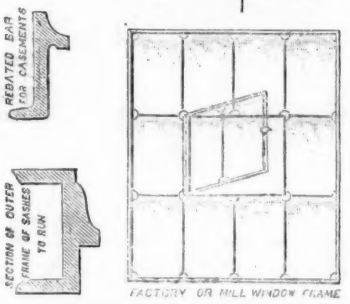

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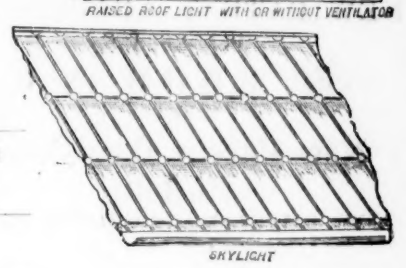

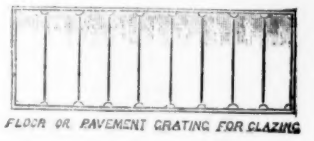

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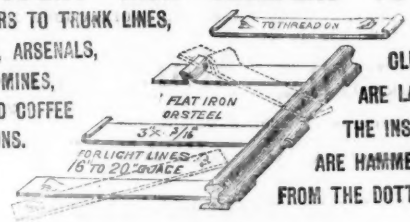
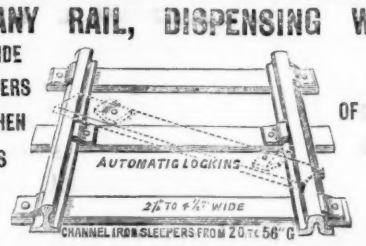


THE OUTSIDE CLIPPING SLEEPERS ARE LAID FIRST, THEN THE INSIDE SLEEPERS ARE HAMMERED UP AS FROM THE DOTTED LINES.



7 MILLIONS OF THESE SLEEPERS ARE IN USE IN ENGLAND, FRANCE, GERMANY, BELGIUM.

FOR CONTRACTORS, FORTIFICATIONS, BRICKYARDS, EARTHWORKS, QUARRIES.

SOLE AGENTS, **SHAW BROTHERS,** BIRMINGHAM.

DRAWINGS & PARTICULARS ON APPLICATION. TO SAVE TIME, PLEASE GIVE GAUGE, WEIGHT OF RAIL AND KIND OF TRAFFIC.

IMPORTANT.

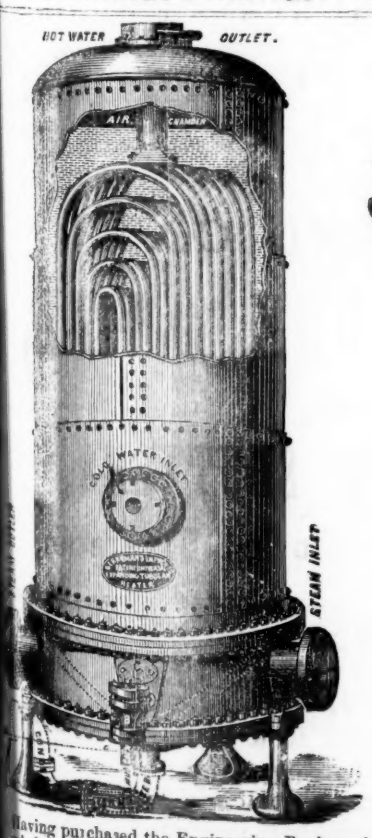
JOSEPH WRIGHT AND CO.

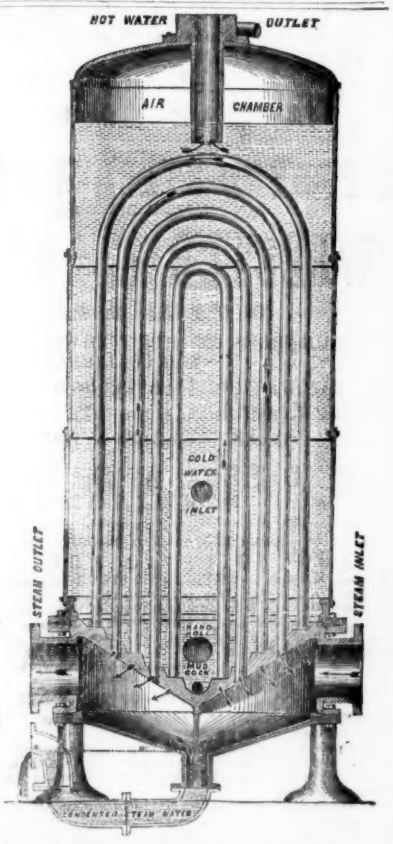
(LIMITED),

NEPTUNE FORGE ENGINE AND BOILER WORKS,

TIPTON, STAFFORDSHIRE,

AND AT 147, QUEEN VICTORIA STREET, LONDON, E.C.





Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER SQUARE FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL to METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information, is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using FOUR HUN-DRED AND THIRTY-THREE of these Heaters.

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors) at their offices 26, FLEET STREET, E.C., where all communications are requested to be addressed.—*December 7, 1878.*